

2247 ⁵³/_c 84

THE
DESCRIPTION
AND
USE
OF A
NEW INSTRUMENT
FOR

Taking internally the Diameters of lying Casks, in the Middle between the Bung and Head.

LIKEWISE

A new and very extensive

T A B L E,

EXHIBITING

The internal LENGTHS of lying Casks.

By THOMAS MOSS.

L O N D O N :

Printed for the AUTHOR, and sold at his House in BROMLEY, MIDDLESEX.

Also by W. STUART, in PATER-NOSTER Row ; and
J. JOHNSON, in ST. PAUL'S CHURCH-YARD.

M.DCC.LXXVI.

DEPARTMENT OF THE INTERIOR
BUREAU OF LANDS

UNITED STATES
OF AMERICA

COMMISSIONERS

LANDS





TO THE
HONOURABLE
THE
COMMISSIONERS
OF HIS MAJESTY'S
REVENUE OF EXCISE

Within the Kingdom of ENGLAND, &c.

HONOURABLE SIRS,

I Should undoubtedly have reason to accuse myself of great arrogance, in dedicating this small performance to your honours, were I not perfectly satisfied in my mind, that what is contained in the ensuing pages, if properly and *impartially* attended to, will enable the practitioner in cask-gauging to proceed with far more certainty than any general method yet known.

And since your honours, for the just and better security of the revenue, have been pleased to approve, and authorize the practice, of an universal method of gauging oval utensils which I published some time ago; I was therefore en-

DEDICATION.

couraged to hope that an instrument commodiously adapted for obtaining the contents of lying casks, by the same indubitable principle, would likewise be found of great service in justly ascertaining his MAJESTY'S REVENUE, and, consequently, not fail of meeting with your honours approbation.

Should I be so happy as to obtain that, inexpressible satisfaction would redound to,

Honourable Sirs,

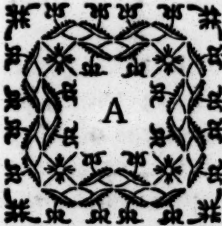
Your honours most obedient,

And dutiful servant,

THOMAS MOSS.



P R E F A C E.

T the time when I first considered of the present practice and uncertainty of taking the internal lengths of lying casks, I conceived it necessary to calculate a table similar to that in the following pages; and, in consequence of these ideas, I was induced to hope that the publishing such an extensive table would not be wholly unacceptable to those employed in this branch of gauging.

Having resolved with myself with respect to the form of a table, and made some progress in the calculation thereof, I was then naturally led to think of applying it to some *scientific* and *general* method of determining the contents of lying casks; and accordingly I have, from an infallible principle well known to mathematicians, used my utmost endeavours to accommodate the practitioner with such a method: From which principle no method or device, that I have yet seen, was ever before rendered sufficiently accurate or practicable. How far my endeavours may prove successful, time and experience will best determine.

It is not my intention to depreciate the works of former writers on the subject of cask-gauging; nor, at this time, to meddle with the methods, however absurd, that are now practised by some others; my attention and abilities have been exerted in endeavouring to avoid error and censure myself: But these, it is well known, are impossible to be avoided!

Nay, even *some* have already expressed the greatest contempt of the instrument herein described, before they have either seen the construction of it, or are acquainted with one tittle of its principles: But such hasty and premature censure, it is presumed, will prove rather an impeachment on their own *judgment* and *candour* than on his whom they have endeavoured to injure by such disingenuous and invidious expressions.

And

P R E F A C E.

And though I must expect that the method which I have here given (the fundamental principle whereof came from the pen of the immortal NEWTON) will be most unreasonably and unmercifully decried by *some* practitioners, who, for want of inclination or discernment, inconsiderately despise all science, make *expedition* their *only* object, and are no ways concerned or solicitous about the truth of the principles upon which their computations are founded; yet, I have the satisfaction to think, on the other hand, that what is here laid down will meet with the approbation of every *candid, inquisitive, and intelligent*, reader; because it is well known that such readers are never prepossessed in favour of methods, however concise and easy in their operations, that have no foundation in science, and which, like many *expeditious* rules and methods, are formed merely from *hypotheses*.

If, indeed, *expedition* were only to be regarded in taking the dimensions, and computing the contents, of vessels; then, in that case, the ordinary practice, of computing the areas of oval utensils as ellipses, would, for the sake of conciseness, certainly claim the preference of the general method of equidistant perpendicular ordinates: But this last (as it is now given in my treatise of gauging in *one easy general rule*) has been repeatedly proved to be of very great importance to the revenue; inasmuch, that the honourable the Commissioners have been pleased to issue out a general and very judicious order throughout the kingdom for this method to be practised in the gauging of oval utensils.

As an evident proof of the superiority of this method, I can produce a real case, supported by incontestable authority, wherein it plainly appears, that, if the common method had been taken, or the vessel gauged as an elliptical one, the revenue would, by such a procedure, have *actually* lost $\frac{1}{20}$ th part *nearly*; or the duty of 384 gallons in 7889.

Now, seeing the aforesaid method of equidistant ordinates is clearly proved, and universally acknowledged, to be of such general utility in computing the areas of oval utensils, I apprehend, therefore, that no reason can possibly be assigned why the very same *unerring* principle should not likewise be applied to the business of cask-gauging, and found therein to be equally just and advantageous to the revenue; especially if it be considered, that the *duty* of a gallon in the latter case, in most instances, is very considerable to *that* in the former.

It may, indeed, be urged with the greatest propriety, that there is no arriving at a *mathematical exactness* in determining the contents of casks, by any method of computation whatever; not only on account of the impossibility of taking their *true* dimensions, but also by reason of their internal irregularities:

But,

P R E F A C E.

But, notwithstanding we cannot obtain such a degree of *accuracy*, or the dimensions of a cask *strictly true*, yet, in computing its content from the dimensions taken, we ought certainly to make choice of a method the most *exact* and *general* that can be contrived or invented: And such method of computation will, I presume, be found in the ensuing pages; derived from a principle the most *accurate* and *comprehensive* that ever was, or, perhaps, ever can be discovered.

The instrument, herein described, is the very first that has been constructed for obtaining internally, by inspection, a diameter in the middle between the bung and head of any lying cask: I hope, however, it will not be looked upon as a matter of mere speculation; since it must undoubtedly appear to every person not blinded by *prejudice*, or bigotted to an arbitrary and prevailing custom of gauging, that the method of applying the said instrument is not only practicable, but extremely easy; and with regard to the principles, upon which its construction and the method of computation are founded, I may, without the imputation of vanity, I hope, venture to pronounce that they will be found to be incontrovertibly true. For a confirmation whereof, I submit to the judgment and determination of any *unprejudiced* and *disinterested* person, who will carefully gauge any lying cask, let its form and curvature be what they will, by the instrument and instructions here laid down, and afterwards take the trouble to ascertain the content of that cask by a known *standard measure*.

Before such an experiment be made, or some defect proved in the principles here given, it would most certainly argue the highest degree of *partiality* or *malevolence* in any one to condemn and depreciate the instrument, or raise mere *trifling* objections to its utility; only because the application of it is attended, perhaps at *first*, with a little more trouble than that method, which, for the sake of *expedition* and *dispatch*, is now generally practised in the gauging of lying casks.

The following extensive table, it is easy to be observed, will not only be found extremely useful in obtaining the internal lengths of lying casks, but also in most of the other branches of practical mathematics, where a numerical operation of that universal proposition of *Euclid*, 47. 1. is required. For, in any right-angled triangle, if the hypotenuse be denoted by any number, expressing the diagonal of a cask, at the top of the table, and one of the legs of that triangle be denoted by a number expressing half the sum of the bung and head diameters; then the other leg (representing the semi-length) will be obtained by taking *half* the corresponding number (or length) in the table. And the result of an operation, by this table, will, in a great many instances, be *exact*, or else *true* to the

P R E F A C E.

the second decimal; and will seldom be deficient more than $\frac{3}{100}$ ths of an *unit*, and never so much as $\frac{5}{100}$ ths, or $\frac{1}{20}$ th; which, in actual mensuration, is too inconsiderable to be regarded.

It may not be amiss to mention here a circumstance that was inadvertently omitted in the *note*, p. 18, with respect to the different tension of the plumb-line; which is, that if the plummet be suspended by a small brass wire or chain, instead of a string, the different tension specified in that *note* will then be avoided. However, if the said *note* be duly attended to, and the instrument properly tried and adjusted thereby, no error can possibly arise by the plummet's being suspended to a line, or string, instead of a wire.

I shall only further add, that the ensuing pages are submitted to the criticism of the *judicious* reader; and I trust that such little oversights as have escaped my notice will be candidly excused and corrected.

Bromley, *Middlesex*,
Nov. 8, 1776.

A D V E R T I S E M E N T.

THE author of this small treatise embraces the present opportunity of acquainting his mathematical readers, that he intends to publish, in 4 numbers, price 1s. 6d. each, a great variety of geometrical problems, with their constructions, by a geometrical analysis somewhat similar to the method of the ancients.

This work will contain a great number of new problems and constructions, and likewise the demonstrations of many new properties of triangles and other figures, not to be found in any author. And moreover, by way of notes, will be frequently interspersed the algebraical solutions of several problems; particularly such as shew when the *analysis* of GEOMETRY or that of ALGEBRA has the most remarkable advantage in point of perspicuity, evidence, and simplicity.

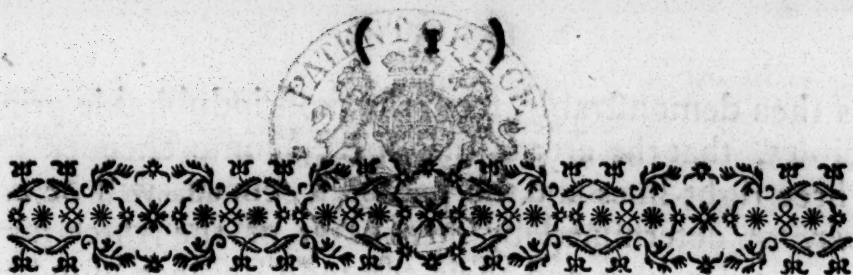
The work will be put to press as soon as the number of copies engaged for amounts to two hundred. Such mathematical gentlemen, or others, as are disposed to promote this undertaking, are requested to signify the same by a few lines, *post paid*, directed to T. Moss, as above; or by any other more convenient method.

. No money will be required till the delivery of the first number.

ERRATA.

Page 17, line 7, for *diameter*, read *diameters*.

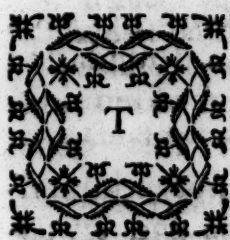
68, line 7, for 42.2, read 52.2.



THE
DESCRIPTION AND USE
OF A
NEW INSTRUMENT,

FOR

Taking internally the Diameters of lying
Casks, in the Middle between the
Bung and Head.



HERE is no method, that I know of,
yet discovered for approximating the
quadrature (or area) of any proposed
curvilinear space whose form or figure
is unknown, so easy, so comprehen-
sive, and so universally adapted to
practical uses, as that which is by means of equidistant
right-lines drawn perpendicular to some other right-
line in such space or figure: For, if we suppose
three equidistant right-lines to be drawn perpendicu-
lar from another line, and a parabolic curve, whose
axis is also parallel to the said three equidistant right-
lines, to pass through the other extremes thereof; it

B

is

is then demonstrable, from the most indubitable principles, that the area of that space, comprehended by three right-lines and the parabolic curve, will be *accurately* determined by means *only* of the three perpendicular lines and their common distance asunder, or the distance of their extremes: And, since a parabolic curve has an *infinite* variation of curvature, we may therefore justly conceive, that some part of it will coincide, *very nearly*, with any other curve, for a small distance, that may be supposed to pass through those three points.

By using equidistant sections perpendicular to the axis, instead of lines parallel to it, the same method also extends to the approximating the cubature (or solid content) of any proposed body: For the convex superficies of the frustum of a parabolic conoid, &c.* may also, for a small distance, be justly conceived (for the above reason) to be *very nearly* coincident with any other frustum whose convex superficies passes through the same three equidistant and parallel sections. It, therefore, evidently follows (and was first of all very judiciously observed, by a mathematician † of the first rank) that no *rule*, ever yet laid down for determining the contents of casks, is built upon such a general and certain foundation as *that* which is derived from the method of equidistant ordinates or sections: For, by this general method, it is well known, that, notwithstanding no regard need be taken of the *form* and *curvature*

* It is demonstrable (see the ingenious Mr. Hutton's Mensuration) that the cubature of the frustum of any solid, generated by the rotation of any conic section about its axis, is always accurately expressed by means only of three equidistant parallel sections and their common distance asunder, or the distance of the extremes. This may likewise be proved by another method.

† Mr. Robert Skircliffe, in the year 1740, published an excellent treatise of gauging; wherein he has introduced the method of measuring curve-lined planes and solids by approximation, invented by Sir Isaac Newton.

ture † of the cask, we shall nevertheless be always certain, either of obtaining its content *strictly true*, or else to an amazing degree of exactness; and this last too, in many cases, when every other rule would be found ineffectual, and produce a considerable error, either in excess or defect.

The method which I here propose requires a diameter of the cask to be taken *exactly* in the middle between the bung and head; which middle-diameter may be obtained, with great ease and accuracy, by means of a *new diagonal instrument*, the construction and application whereof I shall now proceed to lay down.

This instrument consists of two straight pieces of box, one of them about 11 inches and the other about 49 inches long: These pieces are contrived to join, by means of a socket in one of them, so as to become one uniform rod, 60 inches in length, about $\frac{3}{10}$ ths of an inch broad, and about $\frac{6}{10}$ ths thick.

On one of the two broadest sides are two lines of inches, decimally divided; these lines are so placed as to be the most commodious for taking the diagonal, each way, on the same side of the cask, in order to determine its middle, and consequently its true diagonal: The opposite side is likewise inched and tenthed to 50 inches: This line may also serve, upon

B 2

occasion,

† I have been told, that some practical cask-gaugers *pretend* to determine the variety of any cask by only viewing it: But by what method this can be effected, with the least degree of certainty, will for ever remain a mystery to me, and to every one, I believe, who has any idea of the nature and infinite properties of curve lines.

It is indeed demonstrable, that, by means of the distance *mn* (see *fig. 2.*) we can determine to which of the conic sections the curve of the cask approaches; but, without that distance, I dare venture to pronounce that it is utterly impossible to determine, *merely by viewing a cask*, whether it is the middle frustum of a *spheroid*, *parabolic spindle*, &c. or whether the curve of the cask is that of any of the conic sections; because, it is manifest, that a vast number of different curves may be described through the same three points, D, O, E. (See the *aforesaid fig.*)

occasion, for taking the diagonal, &c. but the use of it, at least from 14 to 23 inches, is very considerable. A slit is made quite through the middle of the rod, from 13.7 to 23 inches; and round the rod is a brass, exactly fitted to slide thereon, which may be stopped at any required point, between 14 and 23 inches, by means of a small screw on the side. This circumscribing sliding-brass is to be always fixed at such a division on the instrument as denotes the middle of the diagonal of the cask which you may be about to gauge: *i.e.* if the diagonal of a cask was 37.8 inches, the edge of the aforesaid brass must then be fixed at 18.9.

On the top of the aforesaid brass is fixed another narrow piece, projecting along the slit of the instrument: This piece of brass, at about $\frac{3}{16}$ ths of an inch from the edge of the circumscribing sliding-brass, is made to return with an angle of about 45 degrees; so that a small hole, near the end of it, may be exactly in the center (or rather the *axis*) of the rod, and also in the same plane with the lower edges of the circumscribing sliding-brass. Through this small hole runs a plumb-line, which is connected to a brass slide, about 3 inches long, at the top of the rod.

By means of this angular piece of brass, as above described, the end of the plummet, by being made sufficiently tapering, may always be drawn up to the axis of the rod, as well as to the middle of the diagonal; and the distance from the aforesaid hole to the bottom of the plummet (which bottom must likewise be made very tapering, on account of the inclination which the bottom-staff has to the horizon) will be equal to the length of the plummet in every direction of the instrument; which distance must therefore be measured, and marked, for the first division, at (or very near) the top of the rod, opposite
the

the uppermost end of the said little brass slide ; and then a line of inches, &c. is continued from that first division to 25 inches. This line of inches shews, by inspection, by means of the brass slide, the *exact* length of the plumb-line *ar*, (see *fig. 2.*) or the distance (in a direction perpendicular to the horizon) from the middle of the diagonal to the side of the cask.

On one of the narrowest sides is graduated a line of 35 inches, and also, upon the same side, a line of half-inches ; both of these lines are decimally divided : And, in a groove between them, there is a slide of 16 half-inches, which is also decimally divided. These three lines shew, by means of the afore-said *plumb-line* and half the difference of the bung and head diameters, the *true* diameter (*nr*) in the middle between those diameters.* (See *fig. 2.*)

Note. The instrument being about $\frac{3}{10}$ ths of an inch broad, it will therefore be necessary to have the lower end sloped off on each side, so as to reduce it to about $\frac{4}{10}$ ths broad at the extremity.

This is a general instrument for obtaining *internally*, by inspection, a diameter in the middle between the bung and head of every lying cask, whose diagonal is not less than 28 nor greater than 46 inches : And, by the very same method, an instrument may be adapted for taking the middle-diameter of any cask, whose diagonal may happen from any assigned number less than 28 to any other greater than

LEMMA.

* If, at the extremes of a right-line AB, two perpendiculars, AC, BD, be erected, and the other extremes thereof be joined by a right-line, or curve of any kind : Then, if a solid be conceived to be generated by the rotation of the space ABDC, about AB as an axis, and DE (FC) be supposed to represent the diagonal of the solid CDFE so generated, I say, that the perpendicular distance from the middle of that diagonal to the axis of the solid will be always equal to half the difference of the semi-

diameters, or perpendiculars, AC and BD : i. e. $dv(sv) = \frac{BD - AC}{2}$.

than 46 inches ; *i. e.* by only making the slit through the instrument, where the sliding-brass is to be applied, from about $\frac{3}{10}$ ths less than that inch expressing half the less diagonal to that inch denoting half the greater. It

DEMONSTRATION.

Through the point d draw IH parallel to the axis AB . Then it is manifest (because the triangles DHd and EId are similar and equal in every respect) that $EI (DH) = EA (AC) = AI = dv = BH$, whence $BH (dv) + DH - AC = 2 dv$, or $BD - AC = 2 dv$; therefore $dv = \frac{BD - AC}{2}$.

Q. E. D.

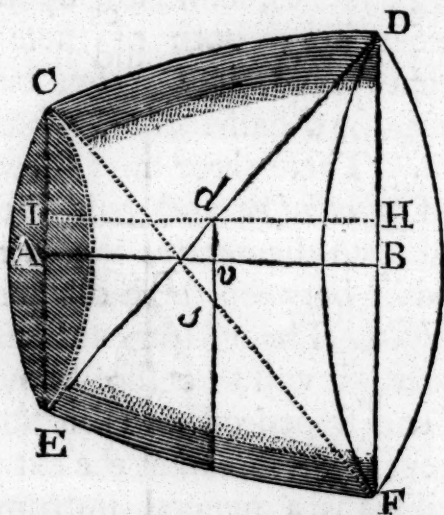
COROLLARY.

Hence the distance dv is evidently equal to $\frac{1}{2}$ th of the difference of the diameters DF , CE of the solid $CDFE$, supposed to be generated by the rotation of the space $ABDC$ about AB as an axis. And hence the reason is manifest for diminishing the plumb-line by half the difference of the bung and head diameters, graduated on the slide upon a half-inch-scale, in order to determine the semi-diameter of the cask, in the middle between the bung and head ; and also its diameter there, by means of the half-inch-scale on the other side of the slide.

SCHOLIUM.

It is evident, that, by means of the plumb-line and similar triangles, a diameter may be obtained in any assigned part of the cask, and consequently *three, five, &c.* equidistant diameters may be taken between the bung and head ; but as *one* (besides the bung and head) is known to be quite sufficient for any cask whatever, and will approximate its content to a very great degree of accuracy ; it would therefore be unnecessary to give the rule for obtaining those equidistant diameters.

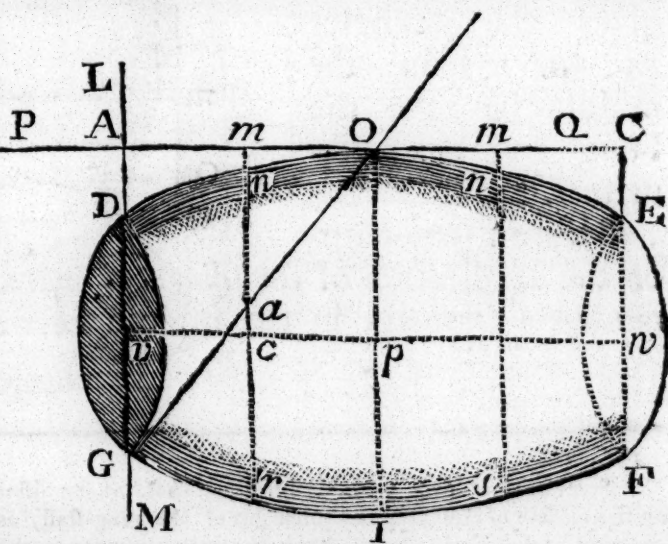
☞ The late Mr. *William Yeo* (in his treatise upon ullaging, p. 213, published in the year 1749) was the first that hinted at a method of determining the middle-diameter of a lying cask, by means of *measuring* the length of a plumb-line, let fall from the middle of a rod placed diagonally in the cask at the bung hole. Which method, though very ingenious, seems a little obscure, (the diagram annexed to it affording no assistance to any demonstration,) and evidently appears to have been derived from some consideration independent of the preceding lemma, and is, therefore, far too complex for practical use : Nor is that method sufficiently accurate for obtaining a dimension, which ought certainly to be found with the utmost precision : For the said method requires, after the plumb-line is let fall, not only the rod to be taken out of the cask, and that plumb-line to be *actually measured*, but likewise a numerical operation, for obtaining that which is here far more accurately effected, by *barely* inspecting the instrument while it remains in the cask.



It may not be amiss to mention here, that there is another method of obtaining a diameter in the middle between the bung and head diameters, of either a *lying* or *standing* cask, provided it happen to be clear of all external incumbrances, such as wooden hoops, &c.

Let a straight rod, of a suitable length, be applied to the bulge of the cask, in such a manner, that the perpendicular distances from the rod to each extremity of the cask, and also to its axis (*vw*) continued both

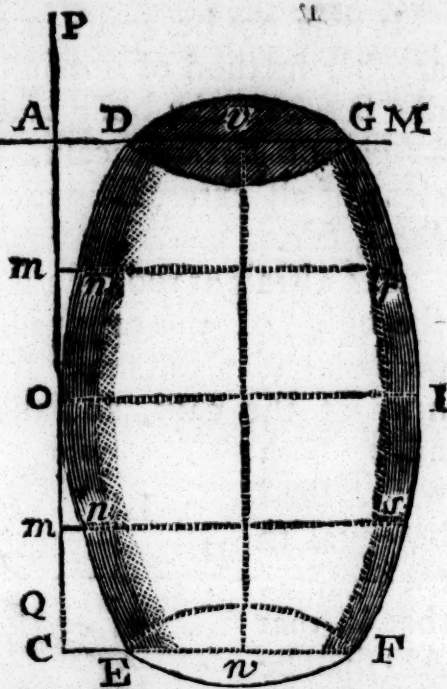
ways, shall be equal to each other; that is, that AD shall be equal to CE; which indeed will always happen when the head-diameters are



equal: But the following method is more expeditious and certain. Apply any straight rod LM across either head, passing over its center; then, instead of a plumb-line as is usually practised for a standing cask, it will be the most commodious and general (serving both for lying and standing casks, if there be no external incumbrances) to have another straight rod PQ of a convenient length, (see the following *fig.*) made to slide through a mortise at A, in a direction perpendicular to the former, touching the bulge of the cask, as at O. Then mark the middle of the cask, and from that mark (O) set off, either

either way, on the rod or rule, $\frac{1}{4}$ th of the internal length of the cask, as Om ; and then the double of the perpendicular distance (mn) from the rod at m to the cask, being taken from the bung-diameter OI , gives the diameter nr (or ns) in the middle between the bung and head diameters. *

Before I enter upon the application of the *diagonal instrument*, for obtaining a diameter in the middle between the bung and

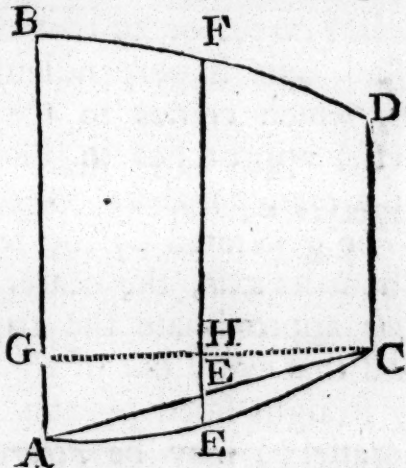


* Some readers may probably imagine, that, as the distance mn is obtained on the outside of the cask, the thickness of the bung-staff, as well as twice mn , ought to be deducted from the bung-diameter, in order to obtain the middle-diameter nr (or ns). It may therefore be proper to observe, that the method here given would be mathematically true, provided that the staff, at the points O and m , was of an equal thickness, in a direction parallel to the heads of the cask; and consequently, as there can be no material (if any) difference in thickness at those two points, no sensible error can arise in the aforesaid method of finding the middle-diameter.

An instrument thus constructed will be found extremely useful in taking the bung-diameter of a *standing cask*. For, let the rod LM , passing over the head, be inched, &c. from A to M ; then it is evident, that $AG + AD = OI$; or the sum of the distances, from A to the outsides of the chimbs, will give the diameter OI ; that is, the diameter of the cask from outside to outside; from which sum subtract twice the thickness of the staff at the bulge, and the remainder will give the internal bung-diameter required.

It may not be amiss to observe, that this instrument would be rendered the most commodious for obtaining the distance mn ; if a line of inches, decimally divided, was graduated on the sliding-rod PQ , beginning at the point O ; and this sliding-rod should be fixed at any required point by means of a screw at A : And, moreover, a small slit should be made quite through the said rod about 8 inches long, and also about the middle between A and O , and a thin piece of brass, 5 or 6 inches long, exactly fitted to slide therein perpendicular to the rod, and inched, &c. from the end next the cask.

and head of a *lying* cask, it may be necessary to observe to the practical reader, that the measure of any space bounded by two parallel lines, and two curves of any kind, or two parallel lines and another right-line and a curve of any kind, is well known, to the speculative reader, to be very nearly (and sometimes *accurately*) expressed by the sum of the two parallel lines added to four times another, taken *exactly* in the middle between them, and this sum multiplied by $\frac{1}{6}$ th of the perpendicular distance of the two extreme parallel lines, (or $\frac{1}{3}$ d of the common perpendicular distance of the three parallel lines). Or, in other words, the sum of AB, CD, and four times EF, being multiplied by $\frac{1}{6}$ th of CG the perpendicular, (or $\frac{1}{3}$ d of GH or CH,) gives *very nearly* (or *accurately*) the measure of the whole space ABFDCEA.



By conceiving the three equidistant right-lines, AB, EF, and CD, to be three equidistant parallel sections, or the above Figure to represent a solid instead of a plane, we shall then have the following *general rule* for all solids whose ends are parallel.—To the sum of the two extreme areas, or sections, add four times that in the middle; multiply this last sum by $\frac{1}{6}$ th of the distance of the extreme areas, (or $\frac{1}{3}$ d of the common distance of the three sections,) and the product will give the measure of the solid *nearly*.

And therefore, when the solid is represented by a cask whose bung-diameter is exactly in the middle between the two heads, the said *general rule* will then become as follows.

C

The

The square of the bung-diameter, the square of the head-diameter, and four times the square of a diameter in the middle between the bung and head, being all added together; and this sum being multiplied by the length of the cask, and the product divided by 2154.3 * and 1764.72, the quotient will give the required content of the cask in ale and wine gallons respectively.

It may be proper to observe here, that the nearer the curve of the cask approaches to a *right-line*, *parabolic curve*, or to that of any of the conic sections whose axis is perpendicular to the bung-diameter; or, which comes to the same thing, the nearer the vessel approaches to the form of a *cylinder*, frustum of a *cone*, *parabolic conoid*, or any frustum supposed to be generated by the revolution of a conic section about its axis, the nearer does the preceding *general rule* approximate the truth; because it may be proved that every one of those solids (and indeed of every straight-sided pyramidal frustum whose ends are parallel†) may be *accurately* ‡ obtained by the said *rule*. (See p. 2.)

As

* It is evident (see *fig. p. 7.*) that $\overline{DG^2 + 4nr^2 + OI^2} \times \frac{vp}{6 \times 359.05} =$ the content DOIG in ale gallons; consequently $\overline{DG^2 + 4nr^2 + OI^2} \times \frac{2vp}{2154.3}$ (or $\overline{DG^2 + 4nr^2 + OI^2} \times \frac{vw}{2154.3}$) gives the content of the cask in ale gallons: And, for the same reason, $\overline{DG^2 + 4nr^2 + OI^2} \times \frac{2vp}{6 \times 294.12}$ (or $\overline{DG^2 + 4nr^2 + OI^2} \times \frac{vw}{1764.72}$) gives the content in wine gallons.

† The frustum of any pyramidal or tapering solid, in a mathematical sense of the word, is what remains after the upper part is cut off by a plane in any direction, except that which meets with the plane of the base; but the cutting plane, for the general part, is *parallel* to the base.

‡ Admitting the number, used in expressing the measure of a circle whose diameter is unity, is the *exact* quadrature of that circle.

As great care must be observed in taking the true diagonal of a cask, and consequently thereby its true middle-diameter and length; it will therefore be proper to prevent the reader from falling into an error that has long prevailed over reason in the method of obtaining such diagonal.

It is a general custom to have the instruments, that are used in taking the diagonal of casks, sloped or bevelled off at the end, even some of them almost to an edge, in order (as it is *supposed*) that such instruments may shew the *true* distance from the middle of the bung-hole to the intersection of the head and the staff opposite the bung-hole. But this, in my opinion, is a very absurd notion, and therefore ought to be corrected.

For, it is well known, the heads of casks, especially of foreign ones, are sloped or bevelled off on the inside quite to the outside edge, in order that they may go into the groove of the staves; and therefore, if the rod is likewise sloped off at the end, so as to touch the edge of that groove, we shall then, by means of taking such diagonal, certainly include (in the semi-length of the cask) the whole thickness of the head, except that small part of it that goes into the groove.

I have indeed been informed, by very intelligent workmen, that the heads of most casks made in *England*, particularly in and about *London*, are sloped off a little on the outside, which will cause only about two-thirds of the thickness of the head to fall within the cask from the groove; and therefore, even in that case, if the end of the diagonal rod (or rule) is made so thin as to touch the edge of the groove, we shall, by that means, make the length of the cask too much by once the thickness of the head, and about one-third part more.

It is moreover necessary to observe, that the staves of a cask, particularly of a foreign one, appear to be first formed very nearly of an equal thickness; but then, in order to fit the head into the groove with the greater exactness, they are always made thinner, by being considerably hollowed all round for a small distance near the ends; which circumstance will evidently have a sensible effect upon the *increase* of the diagonal (taken to the groove) of the cask, but not on *that* of its content.

Now, since there is no obtaining a mathematical certainty with respect to the slope at the end of the diagonal rod, I have therefore taken the utmost pains in trying many different casks with one of the heads taken out; and it evidently appeared to me, by all the experiments made, that the end of the said rod, for taking the diagonal of a cask whose head is about one inch thick, should be *four* or *five tenths* of an inch thick, and perhaps, in some cases, more; particularly when the magnitude of the cask and the thickness of its heads, &c. are pretty considerable. Indeed, in small casks, such as hogsheds and half-hogsheds or less, the end of the diagonal rod must be thinner than that above-mentioned.

And here it may be very proper to take notice, that, by various trials carefully made for obtaining the head-diameters of casks, I found (by having one of the heads taken out) that the distance from the inside of the chimb, close to the head, to the outermost slope edge of the opposite staff, measured the internal head-diameter *very nearly*: But then such head-diameter, it is very evident, is considerably too large, especially in foreign casks; because the staves being hollowed all round for a small distance near the head, as aforesaid; we ought, therefore, to conceive the head-diameter (taken as above) to be diminished

minished by twice as much as the thickness of a staff is diminished by hollowing, where the internal head-diameter is (*supposed*) taken; and consequently, instead of taking the head diameter to the outermost slope edge, as above-mentioned, we should only take it to half that slope, and perhaps, in some foreign casks, as brandy pieces and *Lisbon* pipes, &c. not so much.

PROPOSITION I.

Having the bung-diameter, head-diameter, and diagonal of any lying cask given; to find, by the instrument, its diameter in the middle between the bung and head.

THE GENERAL METHOD.

Fix the lower edge of the circumscribing sliding-brass at half the given diagonal; fasten the little brass slide at the top of the rod by means of a small screw; then draw the plummet quite close to the instrument, and, by means of another screw, fasten the plumb-line to the aforesaid brass slide.

Then place the instrument in the cask, and apply the given diagonal, graduated in the middle of that side or face which is towards you when you are about taking the plumb-line,* to the same point in the bung-

* The length of the plumb-line is always determined from the axis of the instrument; and therefore, in taking the diagonal by it, as well as in obtaining the said plumb-line, the line of inches ought, in a strict mathematical sense, to be also considered in the said axis; or at least in a line formed by the intersection of a plane passing through the axis and the middle of that side or face of the instrument which stands towards you in taking the plumb-line. But the line of inches, graduated on the uppermost face of the instrument, being but about 3-tenths of an inch from its axis, can make no sensible difference in the *length* of the diagonal from *that* obtained by a line in the axis, or in the middle of the side, as above: But the difference arising from these two methods, in obtaining the length of the plumb-line, will be too considerable to be disregarded, especially if the cask is pretty long and nearly cylindrical.

bung-hole where the diagonal was first obtained; unscrew the little slide at the top of the rod, and the point to which the top of the brass slide has descended,† when the bottom of the plummet just touches the cask, will shew, by inspection on the line of inches, the true distance (ar) from the middle of the diagonal to the side of the cask, and likewise the double of that distance on the half-inch-scale. (See the *fig. p. 7.*)

Lastly, turn the instrument, and set half the difference of the bung and head diameters (ac) on the slide to the number expressing the length of the plumb-line (ar), or to the double of that distance on the half-inch-scale, as aforesaid; then, opposite the end of the slide towards the right-hand, we have half the middle-diameter (cr) on the inch-scale, or the required middle-diameter on the half-inch-scale.

EXAMPLE.

Let the bung-diameter be 33, head-diameter 25 and the diagonal of a cask 38.4 inches; required its diameter in the middle between the bung and head.

OPERATION.

Fix the lower edge of the circumscribing sliding-brass at 19.2 half the given diagonal (38.4); draw the plummet close to the instrument, fasten the plumb-line to the little brass slide as above described, and let 38.4, in the middle of the face or side which stands towards you, be held at the brass point or index

† As the instrument cannot be commodiously made perfectly inflexible, it may therefore be proper to mention, that, in letting the plummet descend, no pressure should be given to the rod with your hand; or, which is nearly the same in other words, that no force be then applied to the slide but that which acts in an opposite direction to it when it is descending.

dex † in the bung-hole where the diagonal was obtained ; and suppose (for example's sake) the top of the said slide is found to descend to 16.6.

Then, on the other face of the instrument, set half the given difference of the diameters (4) on the slide to 16.6 on the line of inches, or to 33.2 on the half-inch-scale ; and then the end of the said slide towards the right-hand will evidently stand against 14.6 on the said line, being half the required diameter ; or against 29.2 the required diameter on the half-inch-scale.

Note. The half-inch-scale would indeed be quite sufficient for finding the middle-diameter at once, but I apprehend it will frequently be better to find half that diameter by means of the inch-scale ; not only because the divisions are larger, but also because, when the required semi-diameter is found, the double thereof, or the whole diameter, in many cases, is readily obtained *mentally*, without having recourse at all to the half-inch-scale.

But, as it will be necessary to take the middle-diameter to half a tenth on the instrument, strict regard must be observed in taking half a tenth, not only when that happens in the length of the plumb-line, but also when it occurs in half the given difference of the bung and head diameters ; and therefore, in such cases, the half-inch-scale is the best adapted for finding the middle-diameter to half a tenth ; because such half tenth is easier to be distinguished

† In order for obtaining the middle of a cask with the utmost exactness, or the equal diagonals thereof taken each way, I have contrived a piece of brass, about an inch long, which, by means of a screw, may be very expeditiously fixed on the bung-staff : In this brass is a slide, to be moved in a direction parallel to the axis of the cask, with an index projecting from its center and the internal superficies of the cask, nearly to the center of the bung-hole.

☞ This brass is also a very useful instrument for obtaining, at the same time, the bung-diameter of the cask with great accuracy.

guished on this scale than the quarter of a tenth is on the inch-scale.

Thus, for example, suppose the length of the plumb-line was found to be 17.15, and half the difference of the bung and head diameters 3.85. Set 3.85 on the slide to 34.3 on the half-inch-scale, (opposite 17.15 on the inch-scale,) then against the end of the said slide we have 30.45 on the half-inch-scale, the required middle-diameter: Which is evidently more distinguishable than 15.225 (the half of 30.45) on the inch-scale.

PROPOSITION II.

Having the bung and head diameters and diagonal of a lying cask given, to find its content in ale and wine gallons.

RULE.

Find, by the preceding general method, the diameter of the cask in the middle between the bung and head: Then find, by the following table, half the sum of the bung and head (or, which is the same thing, the sum of half the bung and half the head diameters) in the first column on the left-hand, and opposite thereto, in the column distinguished at the top by the given diagonal, you will have the required length of the cask.

Lastly, by the *sliding-rule*, to 46.4 on D for ale, and to 42.0 for wine, set the length of the cask on C; then the sum of the three numbers, opposite the head, the bung, and twice the middle-diameter, on D, gives the required content of the cask in ale and wine gallons respectively.

Note. When the middle-diameter is known, the double of it is readily obtained by means of the inch and half-inch scales mentioned in the preceding operation,

ration, and even sometimes may be determined *mentally*.

Perhaps some readers, particularly those who are more disposed for *cavil* than for promoting science, may object to the method of obtaining the internal length of a cask by means of its bung and head diameter and diagonal; because the diagonal, it may be said, cannot be *truly* obtained, on account of the different thickness of the heads of casks and their internal irregularities, and likewise of the head-diameter being only taken *externally*: But, notwithstanding these objections, if the thickness of the end of the instrument and that of the head be considered nearly as above, and the head-diameter be taken as already described, I dare venture to say, that, in finding the diagonal, and also the length of the cask by the ensuing table, no error can arise that will sensibly affect its content.*

D

EXAMPLE

* It may be proper to take notice, that there are some very remarkable circumstances which attend this *method* of obtaining the length of a cask by the diagonal, and computing its content, that are not to be met with in any *other*; namely, if we should take the head-diameter of a cask a little too much, we should thereby obtain, by the table, its length a small matter too little; and, on the contrary, if we take the head-diameter somewhat too little, the length, by the table, would then be a little too much.

Again, if the end of the instrument should be a little too thick, and thereby shew the diagonal of the cask a small matter too little, consequently the length, by the table, would be rather too little; but then we should obtain the middle-diameter a little too much, as being taken a little too near the bung-diameter: And, on the contrary, by having the diagonal a little too much, the length of the cask would also be a little too much, and the middle diameter too little: And therefore (in any of these circumstances) by computing the content of the cask according to the *general method*, the excess arising from one dimension will always *very nearly* (if not exactly) compensate for, or counteract, the defect in the other.

If it be found by experience that the heads of some casks, imported from particular places, are one inch and a half (or more) thick, then it may be necessary to have another short piece to the instrument (see *p. 3.*) with a thicker end than that above-mentioned.

EXAMPLE I.

Let it be required to find the content of a cask in ale and wine gallons, whose bung-diameter is 32.8, head-diameter 24.4, and diagonal 35.6 inches.

OPERATION.

By fixing the lower edge of the sliding-brass at 17.8 half the given diagonal, and drawing up the plummet * quite close to the instrument, and proceeding in the very same manner as described in the last operation, the top of the little brass slide is found, for example, to descend to 17.5 inches.

Then, on the other slide, set 4.2, half the difference of the diameters, to 17.5 on the line of inches, and, against the end of the said slide towards the right-hand, we shall have 15.4, half the required middle-diameter, on the line of inches, or 30.8, the required middle-diameter, on the line of half-inches. Now, in the ensuing *table*, against 28.6, half the sum of the bung and head diameters, in the column corresponding

* When the plumb-line is drawn up, care must be taken, before it is screwed to the brass slide, that the plummet does but *just touch* the brass which is fixed in the axis of the rod; or, which is the very same in effect, that no more tension is then given to the string than what is caused by the weight of the plummet when the position of the rod is in the direction of the diagonal of the cask.

And here it may not be amiss to mention a circumstance which might, perhaps, escape the observation of an instrument-maker; that is, if the plumb-line be brought under the screw on the brass slide at the top of the rod, in the same direction with which it acts or screws, that screw will, by screwing down the said plumb-line, give such a tension to the said line as to cause it thereby to be longer about half a tenth of an inch; and consequently the first division on the rod, or the top of the brass slide, must begin at about half a tenth less than the length of the plummet.—As suppose, for instance, the length of the plummet was 2.95 inches, the aforesaid first division must then begin at 2.9 inches: But, if the said plumb-line be put under the screw, in a direction contrary to that in which it screws, (which indeed is not so ready in practice as the above method,) the screw will not then give any tension to the string, *as above*; and therefore the first division, or the highest point to which the top of the brass slide can ascend, must then begin with the length of the plummet.

responding to the given diagonal 35.6, we have 42.3 inches, the internal length of the cask.—Then, by the *sliding-rule*, to 46.4 on D set 42.3 the length on C; and against the numbers 24.4, 32.8, and 61.6 (twice the middle-diameter) on D, stand 11.8, 21.2, and 74.4 respectively on C; the sum whereof is 107.4 ale gallons. And, for wine gallons, to 42.0 on D set 42.3 the length on C; then the numbers opposite 24.4, 32.8, and 61.6 (*as above*) on D, are 14.3, 25.8, and 91 respectively on C; whose sum is 131.1 gallons, the required content of the cask.

It may not be amiss to observe, that, at the time of taking the dimensions of a cask, it will be necessary to enter them down on your paper according to the following method, or some other similar to it. (See the preceding *example*.)

Head.	Bung.	Twice the middle diam.	Diagonal.	Length.	Content.
24.4	32.8	61.6	35.6	42.3	...

If the cask, in the preceding *example*, had been considered and gauged as the middle frustum of a spheroid, (its middle-diameter being 30.2,) or, which comes exactly to the same, gauged as such by the *general rule*, p. 10, (the middle-diameter, in that case, being 30.9,) the content would then appear to be 132 wine gallons: And if the diameter in the middle between the bung and head of the aforesaid cask had been found, *by the instrument*, to be 31 inches; *i. e.* only *one-tenth* of an inch more than when considered as a spheroidal cask, (which is far from being impossible,*) the content of such cask would then be 133.3 wine gallons.—These circumstances

D 2 are

* See my *Treatise of Gauging*, the second edition, p. 217 and 218.

☞ In the last line but one, p. 217, abovementioned, for every close cask, read, every close cask made in and about this METROPOLIS.

are mentioned to shew, that even the variation of only a *tenth* or *two* in the middle-diameters of casks (the other dimensions remaining the same) will have a considerable effect upon their contents:† But, indeed, the contents will alter but very little by supposing the same variation in either the bung or head diameters: The reason whereof is very obvious; because, in computing the content by the *general rule*, the area of the circle in the middle between the bung and head is always taken *four times*, but in the others each of them only *once*.

Hence it is manifest, that although two casks may *exactly* agree in dimensions, with respect to their bung-diameters, head-diameters, and lengths, yet the *true* contents of such casks may differ from each other by a quantity far too great to be disregarded; especially when the duty of a gallon, arising from them, is very considerable: But the contents of these casks will *appear* to be equal to each other, by *supposing* them of the same curvature or middle-diameters; and therefore the revenue or the trader must undoubtedly be injured, by obtaining the contents of those casks according to the ordinary method now practised in gauging lying casks.

If

† The above circumstances evidently shew what amazing errors must unavoidably arise by entirely disregarding the middle-diameters of casks, or, as the usual practice is, merely *guessing* at their curvature or variety. And, besides those circumstances, there is likewise another consideration that ought to be mentioned; which is, that though the *external* curvature of a cask may appear to be an hyperbola, or, from the head to almost the bung diameter, the curvature may approach nearly to a right-line, yet the *internal* curvature may be quite different; it may, perhaps, approach nearly to that of an ellipsis or a circle; or, which comes to the same thing, the concave superficies of the cask may be nearly the middle frustum of a spheroid or circular spindle: And therefore this method of taking, internally, the middle-diameter of a lying cask is preferable to any other that, perhaps, can be devised; because, by means of the plumb-line, taken by inspection on the instrument, we can obtain the true middle-diameter when the *external* and *internal* curvatures of the cask have a very sensible difference.

If a cask have very unequal heads, or its greatest diameter should not be in the middle; then, in such case, the best method will be to take two middle-diameters; *i. e.* one between the bung and each head, and compute the contents of the parts, corresponding to those middle-diameters, as two different casks; and then half the sum thereof will give the required content of the cask.

EXAMPLE 2.

Wherein it is proposed to find the content of a cask in wine gallons, whose bung-diameter is 34.5, the *diameter* of one of its heads 28.4, and *that* of the other 26.0 inches; also the *diagonal* corresponding to the greater head is 36.8, and *that* to the less is 38.4 inches.

OPERATION.

When the lower edge of the sliding-brass is fixed at 18.4 half the less diagonal, the plummet drawn close, the little slide fixed at the top, and the instrument placed as described in the general method, p. 13; suppose, for instance, the top of the little brass slide is observed to descend to 17.9 inches; then, on another side of the instrument, set 3, half the difference of the diameters on the slide, to 17.9 on the line of inches, and, against the end of the said slide towards the right-hand, we shall have 16.4 half the required middle-diameter on the inch-scale, or 32.8 on the half-inch-scale, the required diameter.

Find, in the following *table*, 31.4 half the sum of the bung and the greater head diameter; against which, in the column corresponding to 36.8 the less diagonal, we have 38.3 inches, the internal length of a cask whose bung-diameter is 34.5, head-diameter 28.4, and diagonal 36.8 inches.—Then, by the
sliding-

Sliding-rule, to 42.0 on D, set 38.3 the length on C, and opposite 28.4, 34.5, and 65.6 (twice the middle-diameter) on D, we have 17.6, 25.9, and 93 respectively on C, whose sum is 136.3 wine gallons.

Again, by fixing the lower edge of the sliding-brass at 19.2 half the greater diagonal, and proceeding in the same manner as laid down at *p.* 13; suppose, for example, the end of the brass slide is found to descend to 18.2 inches; then, on another face of the instrument, set 4.2, half the difference of the diameters on the slide, to 18.2 on the line of inches, and, against the end of the said slide, we shall have 16.1 half the required diameter on the inch-scale, or 32.2 on the half-inch-scale, the required middle-diameter.

Now, half the sum of the bung and the less head diameter is 30.25, (or 30.2, because .05 of an inch may be rejected,) against which, in the *tab.* and column corresponding to 38.4 the greater diagonal, we have 47.4 inches, the internal length of a cask whose bung-diameter is 34.5, head-diameter 26.0, and diagonal 38.4 inches.

Again, by the *sliding rule*, to 42.0 on D, set 47.4 the length on C, and opposite 26.0, 34.5, and 64.4 (twice the middle-diameter) on D, we have 18.2, 31.9, and 111.4 respectively on C; whence the sum of these three numbers gives 161.5 wine gallons; and therefore half the sum of 161.5 and 136.3 (*found above*) gives 148.9 the required content of the cask.

It may be necessary to observe, that if the decimal arising in the sum or difference of the bung and head diameters happen to be .1, .3, .5, &c. then, in taking half that sum or difference, the *half-tenth* of an inch may be rejected, or a *half-tenth* may be added, in ordinary practice; only observe, that, when the
half-

half-tenth is rejected in half the sum of the bung and head diameters, it makes the length of the cask a little too much; and, when a *half-tenth* is added, the said length will then be a small matter too little; but, in either case, will never cause, in such casks as occur in practice, an error of any consequence in gauging. However, in such cases where the bung and head diameters are very large in proportion to the length of the cask, it may perhaps be thought necessary (if such a case should occur) to consider more strictly the aforesaid *half-tenth*: In order thereto, take *half the sum* of the two lengths corresponding to the two numbers expressing half the sum of the bung and head diameters, made greater and less by .05, (or half a tenth), and *that* will be *nearly* the true length of the cask.

If a cask be equal-headed, and also the diagonals equal to each other, and if it then happen that one of its quarters be lower than the other, or, in other words, that the *diameter* in the middle between the bung and one head be less than *that* between the bung and the other; then, in such case, half the sum of the two middle-diameters * will be the true middle-diameter *very nearly*: Or, which is more expeditious, the very same middle-diameter may be obtained by taking both the equal diagonals, and making use of half the sum of the two plumb-lines.

It will be necessary to observe, that the axis of the cask (or a right-line joining the centers of the heads) must be parallel to the horizon; otherwise the length of the plumb-line, and consequently the middle-diameter, cannot be *strictly* obtained; for it will be always somewhat

* When the middle-diameters are unequal, or when a straight rod is placed upon the middle of a cask, in a direction parallel to its axis, and the perpendicular distances *mn* (see fig. p. 7.) from the rod to each quarter of the cask are unequal; then will the bung-diameter, *minus* the sum of those two unequal distances, be equal to half the sum of those unequal middle-diameters.

somewhat too much when taken towards the higher end, and too little (unless the inclination of the cask be very considerable) when obtained towards the lower end, of the cask : But, if care be first taken that the position of the axis be as nearly parallel to the horizon as possible, no error can then arise, in obtaining the length of the plumb-line, that will sensibly affect the content of any cask that may occur in the practice of gauging.

If an instrument should be required for obtaining a diameter in the middle between the bung and head of very large lying casks, then the whole length of the rod must certainly be more than 60 inches; otherwise the little brass slide will descend into the cask, and thereby render it impossible to obtain the true length of the plumb-line : And indeed it now appears to me, that an instrument, formed for taking the middle-diameter of a cask whose diagonal is about 46 inches, ought to be 65 inches at least.

It may not be amiss to mention, that the numbers in the ensuing table, exhibiting the internal lengths of casks, were derived from twice the square roots of the differences of the squares of the diagonal and half the sum of the bung and head diameters, and that those square roots (expressing the semi-lengths of casks) were always obtained to two places of decimals; but, in taking the double of those roots, (or the whole lengths,) the second decimals were always rejected, as being too inconsiderable to be regarded in practice.

The diagonal instrument for taking the middle-diameter of a lying cask, and also the brass for fixing on the bung-staff, (see p. 15.) are accurately made by that ingenious artist, Mr. *John Gilbert*, mathematical instrument-maker, *Tower-Hill*, LONDON.





A NEW

T A B L E

EXHIBITING THE

INTERNAL LENGTHS

OF

LYING CASKS.

DIAGONAL 28.0 to 28.9:

Half the sum of the bung and head di- ameters.	Inch. 28.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len	L.	L.	L.	L.	L.	L.	L.	L.	L.
21.2	36.5	36.8	—	—	—	—	—	—	—	—
.3	36.3	36.6	36.9	—	—	—	—	—	—	—
.4	36.1	36.4	36.7	37.0	—	—	—	—	—	—
.5	35.8	36.1	36.4	36.8	37.1	—	—	—	—	—
.6	35.6	35.9	36.2	36.5	36.8	37.1	37.4	—	—	—
.7	35.3	35.7	36.0	36.3	36.6	36.9	37.2	37.5	—	—
.8	35.1	35.4	35.7	36.0	36.4	36.7	37.0	37.3	37.6	37.9
.9	34.8	35.2	35.5	35.8	36.1	36.4	36.7	37.0	37.4	37.7
22.0	34.6	34.9	35.2	35.6	35.9	36.2	36.5	36.8	37.1	37.4
.1	34.3	34.7	35.0	35.3	35.6	35.9	36.3	36.6	36.9	37.2
.2	34.1	34.4	34.7	35.1	35.4	35.7	36.0	36.3	36.6	37.0
.3	33.8	34.1	34.5	34.8	35.1	35.4	35.8	36.1	36.4	36.7
.4	33.6	33.9	34.2	34.5	34.9	35.2	35.5	35.8	36.2	36.5
.5	33.3	33.6	33.9	34.3	34.6	34.9	35.3	35.6	35.9	36.2
.6	33.0	33.3	33.7	34.0	34.3	34.7	35.0	35.3	35.7	36.0
.7	32.7	33.1	33.4	33.7	34.1	34.4	34.7	35.1	35.4	35.7
.8	32.5	32.8	33.1	33.5	33.8	34.2	34.5	34.8	35.1	35.5
.9	32.2	32.5	32.9	33.2	33.5	33.9	34.2	34.5	34.9	35.2
23.0	31.9	32.2	32.6	32.9	33.3	33.6	33.9	34.3	34.6	34.9
.1	31.6	32.0	32.3	32.6	33.0	33.3	33.7	34.0	34.3	34.7
.2	31.3	31.7	32.0	32.4	32.7	33.1	33.4	33.7	34.1	34.4
.3	31.0	31.4	31.7	32.1	32.4	32.8	33.1	33.5	33.8	34.1
.4	30.7	31.1	31.4	31.8	32.1	32.5	32.8	33.2	33.5	33.9
.5	30.4	30.8	31.1	31.5	31.8	32.2	32.6	32.9	33.2	33.6
.6	30.1	30.5	30.8	31.2	31.5	31.9	32.3	32.6	33.0	33.3
.7	29.8	30.1	30.5	30.9	31.2	31.6	32.0	32.3	32.7	33.0
.8	29.4	29.8	30.2	30.6	30.9	31.3	31.7	32.0	32.4	32.7
.9	29.1	29.5	29.9	30.3	30.6	31.0	31.4	31.7	32.1	32.4
24.0	28.8	29.2	29.6	29.9	30.3	30.7	31.1	31.4	31.8	32.2
.1	28.5	28.8	29.2	29.6	30.0	30.4	30.7	31.1	31.5	31.8
.2	28.1	28.5	28.9	29.3	29.7	30.1	30.4	30.8	31.2	31.5

(27)

DIAGONAL 28.0 to 28.9.

Half the sum of the bung and head di- ameters.	Inch. 28.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
24.3	27.8	28.2	28.6	29.0	29.3	29.7	30.1	30.5	30.9	31.2
.4	27.4	27.8	28.2	28.6	29.0	29.4	29.8	30.2	30.5	30.9
.5	27.1	27.5	27.9	28.3	28.7	29.1	29.5	29.8	30.2	30.6
.6	26.7	27.1	27.5	27.9	28.3	28.7	29.1	29.5	29.9	30.3
.7	26.3	26.7	27.2	27.6	28.0	28.4	28.8	29.2	29.6	30.0
.8	25.9	26.4	26.8	27.2	27.6	28.0	28.4	28.8	29.2	29.6
.9	25.6	26.0	26.4	26.8	27.3	27.7	28.1	28.5	28.9	29.3
25.0	25.2	25.6	26.0	26.5	26.9	27.3	27.7	28.1	28.5	28.9
.1	24.8	25.2	25.7	26.1	26.5	26.9	27.4	27.8	28.2	28.6
.2	24.4	24.8	25.3	25.7	26.1	26.6	27.0	27.4	27.8	28.2
.3	23.9	24.4	24.9	25.3	25.8	26.2	26.6	27.0	27.5	27.9
.4	23.5	24.0	24.5	24.9	25.4	25.8	26.2	26.7	27.1	27.5
.5	23.1	23.6	24.0	24.5	25.0	25.4	25.9	26.3	26.7	27.2
.6	22.6	23.1	23.6	24.1	24.5	25.0	25.5	25.9	26.3	26.8
.7	22.2	22.7	23.2	23.6	24.1	24.6	25.0	25.5	25.9	26.4
.8	21.7	22.2	22.7	23.2	23.7	24.2	24.6	25.1	25.5	26.0
.9	21.2	21.7	22.3	22.8	23.3	23.7	24.2	24.7	25.1	25.6
26.0	20.7	21.3	21.8	22.3	22.8	23.3	23.8	24.3	24.7	25.2
.1	20.2	20.8	21.3	21.8	22.3	22.8	23.3	23.8	24.3	24.8
.2	19.7	20.3	20.8	21.3	21.9	22.4	22.9	23.4	23.9	24.3
.3	19.2	19.7	20.3	20.8	21.4	21.9	22.4	22.9	23.4	23.9
.4	18.6	19.2	19.8	20.3	20.9	21.4	22.0	22.5	23.0	23.5
.5	18.0	18.6	19.2	19.8	20.4	20.9	21.5	22.0	22.5	23.0
.6	—	—	18.7	19.3	19.8	20.4	21.0	21.5	22.0	22.5
.7	—	—	—	18.7	19.3	19.9	20.5	21.0	21.5	22.1
.8	—	—	—	—	18.7	19.3	19.9	20.5	21.0	21.6
.9	—	—	—	—	—	18.8	19.4	20.0	20.5	21.1
27.0	—	—	—	—	—	—	—	19.4	20.0	20.6
.1	—	—	—	—	—	—	—	—	19.4	20.0
.2	—	—	—	—	—	—	—	—	18.9	19.5
.3	—	—	—	—	—	—	—	—	—	18.9

DIAGONAL 29.0 to 29.9.

Half the sum of the bung and head di- ameters.	Inch. 29.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
21.6	38.7	39.0	—	—	—	—	—	—	—	—
.7	38.4	38.7	39.0	—	—	—	—	—	—	—
.8	38.2	38.5	38.8	39.1	39.4	—	—	—	—	—
.9	38.0	38.3	38.6	38.9	39.2	39.5	—	—	—	—
22.0	37.7	38.0	38.4	38.7	39.0	39.3	39.6	—	—	—
.1	37.5	37.8	38.1	38.4	38.7	39.0	39.3	39.6	39.9	—
.2	37.3	37.6	37.9	38.2	38.5	38.8	39.1	39.4	39.7	40.0
.3	37.0	37.3	37.7	38.0	38.3	38.6	38.9	39.2	39.5	39.8
.4	36.8	37.1	37.4	37.7	38.0	38.3	38.6	39.0	39.3	39.6
.5	36.5	36.9	37.2	37.5	37.8	38.1	38.4	38.7	39.0	39.3
.6	36.3	36.6	36.9	37.2	37.6	37.9	38.2	38.5	38.8	39.1
.7	36.0	36.4	36.7	37.0	37.3	37.6	37.9	38.3	38.6	38.9
.8	35.8	36.1	36.4	36.8	37.1	37.4	37.7	38.0	38.3	38.6
.9	35.5	35.9	36.2	36.5	36.8	37.1	37.5	37.8	38.1	38.4
23.0	35.3	35.6	35.9	36.3	36.6	36.9	37.2	37.5	37.8	38.2
.1	35.0	35.3	35.7	36.0	36.3	36.6	37.0	37.3	37.6	37.9
.2	34.8	35.1	35.4	35.7	36.1	36.4	36.7	37.0	37.4	37.7
.3	34.5	34.8	35.1	35.5	35.8	36.1	36.5	36.8	37.1	37.4
.4	34.2	34.5	34.9	35.2	35.5	35.9	36.2	36.5	36.9	37.2
.5	33.9	34.3	34.6	34.9	35.3	35.6	35.9	36.3	36.6	36.9
.6	33.7	34.0	34.3	34.7	35.0	35.4	35.7	36.0	36.3	36.7
.7	33.4	33.7	34.1	34.4	34.7	35.1	35.4	35.7	36.1	36.4
.8	33.1	33.4	33.8	34.1	34.5	34.8	35.1	35.5	35.8	36.1
.9	32.8	33.2	33.5	33.8	34.2	34.5	34.9	35.2	35.5	35.9
24.0	32.5	32.9	33.2	33.6	33.9	34.3	34.6	34.9	35.3	35.6
.1	32.2	32.6	32.9	33.3	33.6	34.0	34.3	34.7	35.0	35.3
.2	31.9	32.3	32.6	33.0	33.3	33.7	34.0	34.4	34.7	35.1
.3	31.6	32.0	32.3	32.7	33.0	33.4	33.8	34.1	34.4	34.8
.4	31.3	31.7	32.0	32.4	32.8	33.1	33.5	33.8	34.2	34.5
.5	31.0	31.4	31.7	32.1	32.5	32.8	33.2	33.5	33.9	34.2
.6	30.7	31.0	31.4	31.8	32.1	32.5	32.9	33.2	33.6	33.9
.7	30.3	30.7	31.1	31.5	31.8	32.2	32.6	32.9	33.3	33.6
.8	30.0	30.4	30.8	31.2	31.5	31.9	32.3	32.6	33.0	33.4
.9	29.7	30.1	30.5	30.8	31.2	31.6	32.0	32.3	32.7	33.1

DIAGONAL 29.0 to 29.9:

Half the sum of the bung and head di- ameters.		Inch.										
		29.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.	L.	
25.0	29.3	29.7	30.1	30.5	30.9	31.3	31.6	32.0	32.4	32.8		
.1	29.0	29.4	29.8	30.2	30.6	30.9	31.3	31.7	32.1	32.4		
.2	28.7	29.1	29.5	29.8	30.2	30.6	31.0	31.4	31.8	32.1		
.3	28.3	28.7	29.1	29.5	29.9	30.3	30.7	31.1	31.4	31.8		
.4	27.9	28.4	28.8	29.2	29.6	30.0	30.3	30.7	31.1	31.5		
.5	27.6	28.0	28.4	28.8	29.2	29.6	30.0	30.4	30.8	31.2		
.6	27.2	27.6	28.0	28.5	28.9	29.3	29.7	30.1	30.5	30.8		
.7	26.8	27.2	27.7	28.1	28.5	28.9	29.3	29.7	30.1	30.5		
.8	26.4	26.9	27.3	27.7	28.1	28.6	29.0	29.4	29.8	30.2		
.9	26.0	26.5	26.9	27.3	27.8	28.2	28.6	29.0	29.4	29.8		
26.0	25.6	26.1	26.5	27.0	27.4	27.8	28.2	28.7	29.1	29.5		
.1	25.2	25.7	26.1	26.6	27.0	27.4	27.9	28.3	28.7	29.1		
.2	24.8	25.3	25.7	26.2	26.6	27.1	27.5	27.9	28.3	28.8		
.3	24.4	24.9	25.3	25.8	26.2	26.7	27.1	27.5	28.0	28.4		
.4	24.0	24.4	24.9	25.4	25.8	26.3	26.7	27.2	27.6	28.0		
.5	23.5	24.0	24.5	24.9	25.4	25.9	26.3	26.8	27.2	27.6		
.6	23.1	23.6	24.0	24.5	25.0	25.5	25.9	26.4	26.8	27.3		
.7	22.6	23.1	23.6	24.1	24.6	25.0	25.5	26.0	26.4	26.9		
.8	22.1	22.6	23.1	23.6	24.1	24.6	25.1	25.6	26.0	26.5		
.9	21.6	22.1	22.7	23.2	23.7	24.2	24.7	25.1	25.6	26.1		
27.0	21.1	21.7	22.2	22.7	23.2	23.7	24.2	24.7	25.2	25.6		
.1	20.6	21.2	21.7	22.2	22.7	23.3	23.8	24.3	24.7	25.2		
.2	20.1	20.6	21.2	21.7	22.3	22.8	23.3	23.8	24.3	24.8		
.3	19.5	20.1	20.7	21.2	21.8	22.3	22.8	23.3	23.8	24.3		
.4	18.9	19.6	20.1	20.7	21.3	21.8	22.3	22.9	23.4	23.9		
.5	—	19.0	19.6	20.2	20.7	21.3	21.9	22.4	22.9	23.4		
.6	—	—	19.0	19.6	20.2	20.8	21.3	21.9	22.4	23.0		
.7	—	—	—	19.0	19.7	20.2	20.8	21.4	21.9	22.5		
.8	—	—	—	—	19.1	19.7	20.3	20.9	21.4	22.0		
.9	—	—	—	—	—	19.1	19.7	20.3	20.9	21.5		
28.0	—	—	—	—	—	—	19.2	19.8	20.4	20.9		
.1	—	—	—	—	—	—	—	19.2	19.8	20.4		
.2	—	—	—	—	—	—	—	—	19.2	19.8		

DIAGONAL 30.0 to 30.9.

Half the sum of the bung and head di- ameters.	Inch. 30.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
22.0	40.7	—	—	—	—	—	—	—	—	—
.1	40.5	40.8	41.1	—	—	—	—	—	—	—
.2	40.3	40.6	40.9	41.2	—	—	—	—	—	—
.3	40.1	40.4	40.7	41.0	41.3	—	—	—	—	—
.4	39.9	40.2	40.5	40.8	41.1	41.4	41.6	—	—	—
.5	39.6	39.9	40.2	40.5	40.8	41.1	41.4	41.7	—	—
.6	39.4	39.7	40.0	40.3	40.6	40.9	41.2	41.5	41.8	—
.7	39.2	39.5	39.8	40.1	40.4	40.7	41.0	41.3	41.6	41.9
.8	38.9	39.3	39.6	39.9	40.2	40.5	40.8	41.1	41.4	41.7
.9	38.7	39.0	39.3	39.6	39.9	40.2	40.5	40.8	41.1	41.4
23.0	38.5	38.8	39.1	39.4	39.7	40.0	40.3	40.6	40.9	41.2
.1	38.2	38.5	38.9	39.2	39.5	39.8	40.1	40.4	40.7	41.0
.2	38.0	38.3	38.6	38.9	39.2	39.5	39.9	40.2	40.5	40.8
.3	37.7	38.1	38.4	38.7	39.0	39.3	39.6	39.9	40.2	40.5
.4	37.5	37.8	38.1	38.4	38.8	39.1	39.4	39.7	40.0	40.3
.5	37.2	37.6	37.9	38.2	38.5	38.8	39.1	39.5	39.8	40.1
.6	37.0	37.3	37.6	38.0	38.3	38.6	38.9	39.2	39.5	39.8
.7	36.7	37.1	37.4	37.7	38.0	38.3	38.7	39.0	39.3	39.6
.8	36.5	36.8	37.1	37.5	37.8	38.1	38.4	38.7	39.0	39.4
.9	36.2	36.5	36.9	37.2	37.5	37.8	38.2	38.5	38.8	39.1
24.0	36.0	36.3	36.6	36.9	37.3	37.6	37.9	38.2	38.6	38.9
.1	35.7	36.0	36.3	36.7	37.0	37.3	37.7	38.0	38.3	38.6
.2	35.4	35.7	36.1	36.4	36.7	37.1	37.4	37.7	38.1	38.4
.3	35.1	35.5	35.8	36.1	36.5	36.8	37.1	37.5	37.8	38.1
.4	34.9	35.2	35.5	35.9	36.2	36.6	36.9	37.2	37.5	37.9
.5	34.6	34.9	35.3	35.6	35.9	36.3	36.6	36.9	37.3	37.6
.6	34.3	4.6	35.0	35.3	35.7	36.0	36.3	36.7	37.0	37.3
.7	34.0	34.4	34.7	35.0	35.4	35.7	36.1	36.4	36.7	37.1
.8	33.7	34.1	34.4	34.8	35.1	35.5	35.8	36.1	36.5	36.8
.9	33.4	33.8	34.1	34.5	34.8	35.2	35.5	35.9	36.2	36.5
25.0	33.1	33.5	33.8	34.2	34.5	34.9	35.2	35.6	35.9	36.3
.1	32.8	33.2	33.5	33.9	34.3	34.6	35.0	35.3	35.7	36.0
.2	32.5	32.9	33.2	33.6	34.0	34.3	34.7	35.0	35.4	35.7
.3	32.2	32.6	32.9	33.3	33.7	34.0	34.4	34.7	35.1	35.4
.4	31.9	32.3	32.6	33.0	33.4	33.7	34.1	34.4	34.8	35.1
.5	31.6	31.9	32.3	32.7	33.1	33.4	33.8	34.1	34.5	34.9
.6	31.2	31.6	32.0	32.4	32.7	33.1	33.5	33.8	34.2	34.6

DIAGONAL 30.0 to 30.9.

[illegible]

DIAGONAL 31.0 to 31.9.

Half the sum of the bung and head di- ameters.	Inch. 31.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
22.4	42.8	43.1	—	—	—	—	—	—	—	—
.5	42.6	42.9	43.2	—	—	—	—	—	—	—
.6	42.4	42.7	43.0	43.3	—	—	—	—	—	—
.7	42.2	42.5	42.8	43.0	43.3	—	—	—	—	—
.8	42.0	42.3	42.5	42.8	43.1	43.4	43.7	—	—	—
.9	41.7	42.0	42.3	42.6	42.9	43.2	43.5	43.8	—	—
23.0	41.5	41.8	42.1	42.4	42.7	43.0	43.3	43.6	43.9	44.2
.1	41.3	41.6	41.9	42.2	42.5	42.8	43.1	43.4	43.7	44.0
.2	41.1	41.4	41.7	42.0	42.3	42.6	42.9	43.2	43.4	43.7
.3	40.8	41.1	41.4	41.7	42.0	42.3	42.6	42.9	43.2	43.5
.4	40.6	40.9	41.2	41.5	41.8	42.1	42.4	42.7	43.0	43.3
.5	40.4	40.7	41.0	41.3	41.6	41.9	42.2	42.5	42.8	43.1
.6	40.2	40.5	40.8	41.1	41.4	41.7	42.0	42.3	42.6	42.9
.7	39.9	40.2	40.5	40.8	41.1	41.4	41.8	42.1	42.4	42.7
.8	39.7	40.0	40.3	40.6	40.9	41.2	41.5	41.8	42.1	42.4
.9	39.4	39.7	40.1	40.4	40.7	41.0	41.3	41.6	41.9	42.2
24.0	39.2	39.5	39.8	40.1	40.4	40.8	41.1	41.4	41.7	42.0
.1	38.9	39.3	39.6	39.9	40.2	40.5	40.8	41.1	41.4	41.7
.2	38.7	39.0	39.3	39.7	40.0	40.3	40.6	40.9	41.2	41.5
.3	38.4	38.8	39.1	39.4	39.7	40.0	40.4	40.7	41.0	41.3
.4	38.2	38.5	38.8	39.2	39.5	39.8	40.1	40.4	40.7	41.0
.5	37.9	38.3	38.6	38.9	39.2	39.5	39.9	40.2	40.5	40.8
.6	37.7	38.0	38.3	38.7	39.0	39.3	39.6	39.9	40.3	40.6
.7	37.4	37.7	38.1	38.4	38.7	39.0	39.4	39.7	40.0	40.3
.8	37.2	37.5	37.8	38.1	38.5	38.8	39.1	39.4	39.8	40.1
.9	36.9	37.2	37.5	37.9	38.2	38.5	38.9	39.2	39.5	39.8
25.0	36.6	36.9	37.3	37.6	37.9	38.3	38.6	38.9	39.3	39.6
.1	36.3	36.7	37.0	37.3	37.7	38.0	38.3	38.7	39.0	39.3
.2	36.1	36.4	36.7	37.1	37.4	37.8	38.1	38.4	38.7	39.1
.3	35.8	36.1	36.5	36.8	37.1	37.5	37.8	38.1	38.5	38.8
.4	35.5	35.8	36.2	36.5	36.9	37.2	37.5	37.9	38.2	38.5
.5	35.2	35.6	35.9	36.3	36.6	36.9	37.3	37.6	37.9	38.3
.6	34.9	35.3	35.6	36.0	36.3	36.7	37.0	37.3	37.7	38.0
.7	34.6	35.0	35.3	35.7	36.0	36.4	36.7	37.1	37.4	37.7
.8	34.3	34.7	35.0	35.4	35.7	36.1	36.4	36.8	37.1	37.5
.9	34.0	34.4	34.7	35.1	35.5	35.8	36.2	36.5	36.9	37.2
26.0	33.7	34.1	34.4	34.8	35.2	35.5	35.9	36.2	36.6	36.9
.1	33.4	33.8	34.1	34.5	34.9	35.2	35.6	35.9	36.3	36.6
.2	33.1	33.5	33.8	34.2	34.6	34.9	35.3	35.6	36.0	36.3

DIAGONAL 31.0 to 31.9.

Half the sum of the bung and head di- ameters.	Inch.									
	31.0	.1	.2	.3	.4	.5	.6	.7	.8	9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
26.3	32.8	33.1	33.5	33.9	34.3	34.6	35.0	35.3	35.7	36.1
.4	32.4	32.8	33.2	33.6	34.0	34.3	34.7	35.0	35.4	35.8
.5	32.1	32.5	32.9	33.3	33.6	34.0	34.4	34.7	35.1	35.5
.6	31.8	32.2	32.6	32.9	33.3	33.7	34.1	34.4	34.8	35.2
.7	31.5	31.8	32.2	32.6	33.0	33.4	33.8	34.1	34.5	34.9
.8	31.1	31.5	31.9	32.3	32.7	33.1	33.4	33.8	34.2	34.6
.9	30.8	31.2	31.6	32.0	32.3	32.7	33.1	33.5	33.9	34.2
27.0	30.4	30.8	31.2	31.6	32.0	32.4	32.8	33.2	33.6	33.9
.1	30.1	30.5	30.9	31.3	31.7	32.1	32.5	32.8	33.2	33.6
.2	29.7	30.1	30.5	30.9	31.3	31.7	32.1	32.5	32.9	33.3
.3	29.3	29.7	30.2	30.6	31.0	31.4	31.8	32.2	32.6	33.0
.4	28.9	29.4	29.8	30.2	30.6	31.0	31.4	31.8	32.2	32.6
.5	28.6	29.0	29.4	29.8	30.3	30.7	31.1	31.5	31.9	32.3
.6	28.2	28.6	29.0	29.5	29.9	30.3	30.7	31.1	31.5	31.9
.7	27.8	28.2	28.7	29.1	29.5	29.9	30.4	30.8	31.2	31.6
.8	27.4	27.8	28.3	28.7	29.1	29.6	30.0	30.4	30.8	31.2
.9	27.0	27.4	27.9	28.3	28.8	29.2	29.6	30.0	30.5	30.9
28.0	26.6	27.0	27.5	27.9	28.4	28.8	29.2	29.7	30.1	30.5
.1	26.1	26.6	27.1	27.5	28.0	28.4	28.9	29.3	29.7	30.1
.2	25.7	26.2	26.6	27.1	27.6	28.0	28.5	28.9	29.3	29.8
.3	25.3	25.7	26.2	26.7	27.2	27.6	28.1	28.5	29.0	29.4
.4	24.8	25.3	25.8	26.3	26.7	27.2	27.7	28.1	28.6	29.0
.5	24.3	24.8	25.3	25.8	26.3	26.8	27.2	27.7	28.2	28.6
.6	23.9	24.4	24.9	25.4	25.9	26.4	26.8	27.3	27.8	28.2
.7	23.4	23.9	24.4	24.9	25.4	25.9	26.4	26.9	27.3	27.8
.8	22.9	23.4	24.0	24.5	25.0	25.5	26.0	26.4	26.9	27.4
.9	22.4	22.9	23.5	24.0	24.5	25.0	25.5	26.0	26.5	27.0
29.0	21.9	22.4	23.0	23.5	24.0	24.5	25.1	25.6	26.0	26.5
.1	21.3	21.9	22.5	23.0	23.5	24.1	24.6	25.1	25.6	26.1
.2	20.8	21.4	21.9	22.5	23.0	23.6	24.1	24.6	25.1	25.6
.3	20.2	20.8	21.4	22.0	22.5	23.1	23.6	24.1	24.7	25.2
.4	—	20.2	20.8	21.4	22.0	22.6	23.1	23.7	24.2	24.7
.5	—	—	20.3	20.9	21.5	22.0	22.6	23.2	23.7	24.2
.6	—	—	—	20.3	20.9	21.5	22.1	22.6	23.2	23.7
.7	—	—	—	—	20.3	20.9	21.5	22.1	22.7	23.2
.8	—	—	—	—	—	20.4	21.0	21.6	22.1	22.7
.9	—	—	—	—	—	—	—	21.0	21.6	22.2
30.0	—	—	—	—	—	—	—	20.4	21.0	21.6
.1	—	—	—	—	—	—	—	—	20.5	21.1

DIAGONAL 32.0 to 32.9.

Inches.	Inch.									
	32.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
22.9	44.7	—	—	—	—	—	—	—	—	—
23.0	44.4	44.7	—	—	—	—	—	—	—	—
.1	44.2	44.5	44.8	—	—	—	—	—	—	—
.2	44.0	44.3	44.6	44.9	45.2	—	—	—	—	—
.3	43.8	44.1	44.4	44.7	45.0	45.3	—	—	—	—
.4	43.6	43.9	44.2	44.5	44.8	45.1	45.3	—	—	—
.5	43.4	43.7	44.0	44.3	44.6	44.8	45.1	45.4	—	—
.6	43.2	43.5	43.8	44.1	44.3	44.6	44.9	45.2	45.5	45.8
.7	43.0	43.2	43.5	43.8	44.1	44.4	44.7	45.0	45.3	45.6
.8	42.7	43.0	43.3	43.6	43.9	44.2	44.5	44.8	45.1	45.4
.9	42.5	42.8	43.1	43.4	43.7	44.0	44.3	44.6	44.9	45.2
24.0	42.3	42.6	42.9	43.2	43.5	43.8	44.1	44.4	44.7	45.0
.1	42.1	42.4	42.7	43.0	43.3	43.6	43.9	44.2	44.4	44.7
.2	41.8	42.1	42.4	42.7	43.0	43.3	43.6	43.9	44.2	44.5
.3	41.6	41.9	42.2	42.5	42.8	43.1	43.4	43.7	44.0	44.3
.4	41.4	41.7	42.0	42.3	42.6	42.9	43.2	43.5	43.8	44.1
.5	41.1	41.4	41.7	42.0	42.4	42.7	43.0	43.3	43.6	43.9
.6	40.9	41.2	41.5	41.8	42.1	42.4	42.7	43.0	43.3	43.6
.7	40.6	41.0	41.3	41.6	41.9	42.2	42.5	42.8	43.1	43.4
.8	40.4	40.7	41.0	41.3	41.6	42.0	42.3	42.6	42.9	43.2
.9	40.1	40.5	40.8	41.1	41.4	41.7	42.0	42.3	42.7	43.0
25.0	39.9	40.2	40.5	40.9	41.2	41.5	41.8	42.1	42.4	42.7
.1	39.6	40.0	40.3	40.6	40.9	41.2	41.6	41.9	42.2	42.5
.2	39.4	39.7	40.0	40.4	40.7	41.0	41.3	41.6	41.9	42.3
.3	39.1	39.5	39.8	40.1	40.4	40.8	41.1	41.4	41.7	42.0
.4	38.9	39.2	39.5	39.9	40.2	40.5	40.8	41.1	41.5	41.8
.5	38.6	38.9	39.3	39.6	39.9	40.2	40.6	40.9	41.2	41.5
.6	38.4	38.7	39.0	39.3	39.7	40.0	40.3	40.6	41.0	41.3
.7	38.1	38.4	38.7	39.1	39.4	39.7	40.1	40.4	40.7	41.0
.8	37.8	38.1	38.5	38.8	39.1	39.5	39.8	40.1	40.5	40.8
.9	37.5	37.9	38.2	38.5	38.9	39.2	39.5	39.9	40.2	40.5
26.0	37.3	37.6	37.9	38.3	38.6	39.0	39.3	39.6	39.9	40.3
.1	37.0	37.3	37.7	38.0	38.3	38.7	39.0	39.3	39.7	40.0
.2	36.7	37.0	37.4	37.7	38.1	38.4	38.7	39.1	39.4	39.7
.3	36.4	36.8	37.1	37.5	37.8	38.1	38.5	38.8	39.1	39.5
.4	36.1	36.5	36.8	37.2	37.5	37.9	38.2	38.5	38.9	39.2
.5	35.8	36.2	36.5	36.9	37.2	37.6	37.9	38.3	38.6	38.9

(35)

DIAGONAL 32.0 to 32.9.

Half the sum of the bung and head di- ameters.	Inch.										
	32.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.	
26.6	35.5	35.9	36.2	36.6	36.9	37.3	37.6	38.0	38.3	38.7	
.7	35.2	35.6	35.9	36.3	36.7	37.0	37.4	37.7	38.1	38.4	
.8	34.9	35.3	35.6	36.0	36.4	36.7	37.1	37.4	37.8	38.1	
.9	34.6	35.0	35.3	35.7	36.1	36.4	36.8	37.1	37.5	37.8	
27.0	34.3	34.7	35.0	35.4	35.8	36.1	36.5	36.8	37.2	37.5	
.1	34.0	34.4	34.7	35.1	35.5	35.8	36.2	36.5	36.9	37.3	
.2	33.7	34.0	34.4	34.8	35.2	35.5	35.9	36.3	36.6	37.0	
.3	33.3	33.7	34.1	34.5	34.8	35.2	35.6	36.0	36.3	36.7	
.4	33.0	33.4	33.8	34.2	34.5	34.9	35.3	35.6	36.0	36.4	
.5	32.7	33.1	33.5	33.8	34.2	34.6	35.0	35.3	35.7	36.1	
.6	32.3	32.7	33.1	33.5	33.9	34.3	34.6	35.0	35.4	35.8	
.7	32.0	32.4	32.8	33.2	33.6	33.9	34.3	34.7	35.1	35.5	
.8	31.6	32.0	32.4	32.8	33.2	33.6	34.0	34.4	34.8	35.1	
.9	31.3	31.7	32.1	32.5	32.9	33.3	33.7	34.1	34.4	34.8	
28.0	30.9	31.3	31.8	32.2	32.6	33.0	33.3	33.7	34.1	34.5	
.1	30.6	31.0	31.4	31.8	32.2	32.6	33.0	33.4	33.8	34.2	
.2	30.2	30.6	31.0	31.4	31.9	32.3	32.7	33.1	33.5	33.8	
.3	29.8	30.2	30.7	31.1	31.5	31.9	32.3	32.7	33.1	33.5	
.4	29.4	29.9	30.3	30.7	31.1	31.6	32.0	32.4	32.8	33.2	
.5	29.1	29.5	29.9	30.4	30.8	31.2	31.6	32.0	32.4	32.8	
.6	28.7	29.1	29.5	30.0	30.4	30.8	31.2	31.7	32.1	32.5	
.7	28.3	28.7	29.1	29.6	30.0	30.4	30.9	31.3	31.7	32.1	
.8	27.8	28.3	28.8	29.2	29.6	30.1	30.5	30.9	31.3	31.8	
.9	27.4	27.9	28.3	28.8	29.2	29.7	30.1	30.5	31.0	31.4	
29.0	27.0	27.5	27.9	28.4	28.8	29.3	29.7	30.2	30.6	31.0	
.1	26.6	27.0	27.5	28.0	28.4	28.9	29.3	29.8	30.2	30.6	
.2	26.1	26.6	27.1	27.6	28.0	28.5	28.9	29.4	29.8	30.3	
.3	25.7	26.2	26.7	27.1	27.6	28.1	28.5	29.0	29.4	29.9	
.4	25.2	25.7	26.2	26.7	27.2	27.7	28.1	28.6	29.0	29.5	
.5	24.7	25.3	25.8	26.3	26.7	27.2	27.7	28.2	28.6	29.1	
.6	24.3	24.8	25.3	25.8	26.3	26.8	27.3	27.7	28.2	28.7	
.7	23.8	24.3	24.8	25.3	25.8	26.3	26.8	27.3	27.8	28.3	
.8	23.3	23.8	24.3	24.9	25.4	25.9	26.4	26.9	27.4	27.8	
.9	22.8	23.3	23.9	24.4	24.9	25.4	25.9	26.4	26.9	27.4	
30.0	22.2	22.8	23.3	23.9	24.4	25.0	25.5	26.0	26.5	27.0	
.1	21.7	22.3	22.8	23.4	23.9	24.5	25.0	25.5	26.0	26.5	
.2	21.1	21.7	22.3	22.9	23.4	24.0	24.5	25.0	25.5	26.1	

(36)

DIAGONAL 32.0 to 32.9.

Half the sum of the bung and head di- ameters.	Inch.									
	32.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
30.3	—	21.1	21.7	22.3	22.9	23.5	24.0	24.5	25.1	25.6
.4	—	—	21.2	21.8	22.4	22.9	23.5	24.0	24.6	25.1
.5	—	—	—	21.2	21.8	22.4	23.0	23.5	24.1	24.6
.6	—	—	—	—	21.2	21.8	22.4	23.0	23.6	24.1
.7	—	—	—	—	—	21.3	21.9	22.5	23.0	23.6
.8	—	—	—	—	—	—	21.3	21.9	22.5	23.1
.9	—	—	—	—	—	—	—	21.3	22.0	22.5
31.0	—	—	—	—	—	—	—	—	21.4	22.0
.1	—	—	—	—	—	—	—	—	—	21.4

DIAGONAL 33.0 to 33.9.

Half the sum of the bung and head di- ameters.	Inch.									
	33.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
23.4	46.5	—	—	—	—	—	—	—	—	—
.5	46.3	46.6	—	—	—	—	—	—	—	—
.6	46.1	46.4	46.7	46.9	—	—	—	—	—	—
.7	45.9	46.2	46.4	46.7	47.0	—	—	—	—	—
.8	45.7	46.0	46.2	46.5	46.8	47.1	—	—	—	—
.9	45.5	45.7	46.0	46.3	46.6	46.9	47.2	47.5	—	—
24.0	45.2	45.5	45.8	46.1	46.4	46.7	47.0	47.3	47.6	—
.1	45.0	45.3	45.6	45.9	46.2	46.5	46.8	47.1	47.3	47.6
.2	44.8	45.1	45.4	45.7	46.0	46.3	46.6	46.9	47.1	47.4
.3	44.6	44.9	45.2	45.5	45.8	46.1	46.4	46.6	46.9	47.2
.4	44.4	44.7	45.0	45.3	45.6	45.9	46.1	46.4	46.7	47.0
.5	44.2	44.5	44.8	45.1	45.4	45.6	45.9	46.2	46.5	46.8
.6	43.9	44.2	44.5	44.8	45.1	45.4	45.7	46.0	46.3	46.6
.7	43.7	44.0	44.3	44.6	44.9	45.2	45.5	45.8	46.1	46.4

DIAGONAL 33.0 to 33.9:

Half the sum of the bung and head di- ameters.	Inch.									
	33.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
24.8	43.5	43.8	44.1	44.4	44.7	45.0	45.3	45.6	45.9	46.2
.9	43.3	43.6	43.9	44.2	44.5	44.8	45.1	45.4	45.7	46.0
25.0	43.0	43.3	43.6	43.9	44.2	44.5	44.8	45.1	45.4	45.7
.1	42.8	43.1	43.4	43.7	44.0	44.3	44.6	44.9	45.2	45.5
.2	42.6	42.9	43.2	43.5	43.8	44.1	44.4	44.7	45.0	45.3
.3	42.3	42.6	42.9	43.3	43.6	43.9	44.2	44.5	44.8	45.1
.4	42.1	42.4	42.7	43.0	43.3	43.6	43.9	44.2	44.5	44.9
.5	41.8	42.2	42.5	42.8	43.1	43.4	43.7	44.0	44.3	44.6
.6	41.6	41.9	42.2	42.5	42.9	43.2	43.5	43.8	44.1	44.4
.7	41.4	41.7	42.0	42.3	42.6	42.9	43.2	43.5	43.9	44.2
.8	41.1	41.4	41.7	42.1	42.4	42.7	43.0	43.3	43.6	43.9
.9	40.8	41.2	41.5	41.8	42.1	42.4	42.8	43.1	43.4	43.7
26.0	40.6	40.9	41.2	41.6	41.9	42.2	42.5	42.8	43.1	43.5
.1	40.3	40.7	41.0	41.3	41.6	42.0	42.3	42.6	42.9	43.2
.2	40.1	40.4	40.7	41.1	41.4	41.7	42.0	42.3	42.7	43.0
.3	39.8	40.1	40.5	40.8	41.1	41.4	41.8	42.1	42.4	42.7
.4	39.6	39.9	40.2	40.5	40.9	41.2	41.5	41.8	42.2	42.5
.5	39.3	39.6	39.9	40.3	40.6	40.9	41.3	41.6	41.9	42.2
.6	39.0	39.3	39.7	40.0	40.3	40.7	41.0	41.3	41.7	42.0
.7	38.7	39.1	39.4	39.7	40.1	40.4	40.7	41.1	41.4	41.7
.8	38.5	38.8	39.1	39.5	39.8	40.2	40.5	40.8	41.1	41.5
.9	38.2	38.5	38.9	39.2	39.5	39.9	40.2	40.5	40.9	41.2
27.0	37.9	38.2	38.6	38.9	39.3	39.6	39.9	40.3	40.6	40.9
.1	37.6	38.0	38.3	38.7	39.0	39.3	39.7	40.0	40.3	40.7
.2	37.3	37.7	38.0	38.4	38.7	39.1	39.4	39.7	40.1	40.4
.3	37.0	37.4	37.7	38.1	38.4	38.8	39.1	39.5	39.8	40.1
.4	36.7	37.1	37.4	37.8	38.1	38.5	38.8	39.2	39.5	39.9
.5	36.4	36.8	37.2	37.5	37.9	38.2	38.6	38.9	39.3	39.6
.6	36.1	36.5	36.9	37.2	37.6	37.9	38.3	38.6	39.0	39.3
.7	35.8	36.2	36.6	36.9	37.3	37.6	38.0	38.3	38.7	39.0
.8	35.5	35.9	36.2	36.6	37.0	37.3	37.7	38.0	38.4	38.8
.9	35.2	35.6	35.9	36.3	36.7	37.0	37.4	37.8	38.1	38.5
28.0	34.9	35.3	35.6	36.0	36.4	36.7	37.1	37.5	37.8	38.2
.1	34.6	34.9	35.3	35.7	36.1	36.4	36.8	37.2	37.5	37.9
.2	34.2	34.6	35.0	35.4	35.7	36.1	36.5	36.9	37.2	37.6
.3	33.9	34.3	34.7	35.0	35.4	35.8	36.2	36.5	36.9	37.3
.4	33.6	34.0	34.3	34.7	35.1	35.5	35.9	36.2	36.6	37.0

[illegible]

DIAGONAL 34.0 to 34.9.

Half the sum of the bung and head di- ameters.	Inch,									
	34.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
23.0	50.0	50.3	—	—	—	—	—	—	—	—
.1	49.8	50.1	50.4	—	—	—	—	—	—	—
.2	49.7	49.9	50.2	50.5	—	—	—	—	—	—
.3	49.5	49.7	50.0	50.3	50.6	—	—	—	—	—
.4	49.3	49.6	49.8	50.1	50.4	50.7	—	—	—	—
.5	49.1	49.4	49.6	49.9	50.2	50.5	50.7	—	—	—
.6	48.9	49.2	49.5	49.7	50.0	50.3	50.6	50.8	—	—
.7	48.7	49.0	49.3	49.5	49.8	50.1	50.4	50.6	50.9	—
.8	48.5	48.8	49.1	49.3	49.6	49.9	50.2	50.5	50.7	51.0
.9	48.3	48.6	48.9	49.2	49.4	49.7	50.0	50.3	50.5	50.8
24.0	48.1	48.4	48.7	49.0	49.2	49.5	49.8	50.1	50.4	50.6
.1	47.9	48.2	48.5	48.8	49.0	49.3	49.6	49.9	50.2	50.4
.2	47.7	48.0	48.3	48.6	48.8	49.1	49.4	49.7	50.0	50.2
.3	47.5	47.8	48.1	48.4	48.6	48.9	49.2	49.5	49.8	50.1
.4	47.3	47.6	47.9	48.2	48.4	48.7	49.0	49.3	49.6	49.9
.5	47.1	47.4	47.7	48.0	48.2	48.5	48.8	49.1	49.4	49.7
.6	46.9	47.2	47.5	47.8	48.0	48.3	48.6	48.9	49.2	49.5
.7	46.7	47.0	47.3	47.5	47.8	48.1	48.4	48.7	49.0	49.3
.8	46.5	46.8	47.0	47.3	47.6	47.9	48.2	48.5	48.8	49.1
.9	46.3	46.5	46.8	47.1	47.4	47.7	48.0	48.3	48.6	48.9
25.0	46.0	46.3	46.6	46.9	47.2	47.5	47.8	48.1	48.4	48.7
.1	45.8	46.1	46.4	46.7	47.0	47.3	47.6	47.9	48.2	48.4
.2	45.6	45.9	46.2	46.5	46.8	47.1	47.4	47.7	48.0	48.2
.3	45.4	45.7	46.0	46.3	46.6	46.9	47.2	47.4	47.7	48.0
.4	45.2	45.5	45.8	46.1	46.3	46.6	46.9	47.2	47.5	47.8
.5	44.9	45.2	45.5	45.8	46.1	46.4	46.7	47.0	47.3	47.6
.6	44.7	45.0	45.3	45.6	45.9	46.2	46.5	46.8	47.1	47.4
.7	44.5	44.8	45.1	45.4	45.7	46.0	46.3	46.6	46.9	47.2
.8	44.2	44.5	44.8	45.2	45.5	45.8	46.1	46.4	46.7	47.0
.9	44.0	44.3	44.6	45.0	45.2	45.5	45.8	46.1	46.4	46.7
26.0	43.8	44.1	44.4	44.7	45.0	45.3	45.6	45.9	46.2	46.5
.1	43.5	43.8	44.2	44.5	44.8	45.1	45.4	45.7	46.0	46.3
.2	43.3	43.6	43.9	44.2	44.5	44.8	45.1	45.5	45.8	46.1
.3	43.0	43.4	43.7	44.0	44.3	44.6	44.9	45.2	45.5	45.8
.4	42.8	43.1	43.4	43.7	44.1	44.4	44.7	45.0	45.3	45.6
.5	42.6	42.9	43.2	43.5	43.8	44.1	44.4	44.8	45.1	45.4
.6	42.3	42.6	42.9	43.3	43.6	43.9	44.2	44.5	44.8	45.1

DIAGONAL 34.0 to 34.9.

Half the sum of the bung and head di- ameters.	Inch. 34.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
26.7	42.1	42.4	42.7	43.0	43.3	43.6	44.0	44.3	44.6	44.9
.8	41.8	42.1	42.4	42.8	43.1	43.4	43.7	44.0	44.3	44.7
.9	41.5	41.9	42.2	42.5	42.8	43.2	43.5	43.8	44.1	44.4
27.0	41.3	41.6	41.9	42.3	42.6	42.9	43.2	43.5	43.9	44.2
.1	41.0	41.3	41.7	42.0	42.3	42.7	43.0	43.3	43.6	43.9
.2	40.8	41.1	41.4	41.7	42.1	42.4	42.7	43.0	43.4	43.7
.3	40.5	40.8	41.1	41.5	41.8	42.1	42.5	42.8	43.1	43.4
.4	40.2	40.5	40.9	41.2	41.5	41.9	42.2	42.5	42.9	43.2
.5	39.9	40.3	40.6	40.9	41.3	41.6	41.9	42.3	42.6	42.9
.6	39.7	40.0	40.3	40.7	41.0	41.4	41.7	42.0	42.3	42.7
.7	39.4	39.7	40.1	40.4	40.7	41.1	41.4	41.7	42.1	42.4
.8	39.1	39.4	39.8	40.1	40.5	40.8	41.1	41.5	41.8	42.1
.9	38.8	39.2	39.5	39.9	40.2	40.5	40.9	41.2	41.5	41.9
28.0	38.5	38.9	39.2	39.6	39.9	40.3	40.6	40.9	41.3	41.6
.1	38.2	38.6	38.9	39.3	39.6	40.0	40.3	40.7	41.0	41.3
.2	37.9	38.3	38.6	39.0	39.4	39.7	40.0	40.4	40.7	41.1
.3	37.6	38.0	38.4	38.7	39.1	39.4	39.8	40.1	40.5	40.8
.4	37.3	37.7	38.1	38.4	38.8	39.1	39.5	39.8	40.2	40.5
.5	37.0	37.4	37.8	38.1	38.5	38.8	39.2	39.5	39.9	40.2
.6	36.7	37.1	37.5	37.8	38.2	38.5	38.9	39.3	39.6	40.0
.7	36.4	36.8	37.1	37.5	37.9	38.2	38.6	39.0	39.3	39.7
.8	36.1	36.5	36.8	37.2	37.6	37.9	38.3	38.7	39.0	39.4
.9	35.8	36.1	36.5	36.9	37.3	37.6	38.0	38.4	38.7	39.1
29.0	35.4	35.8	36.2	36.6	37.0	37.3	37.7	38.1	38.4	38.8
.1	35.1	35.5	35.9	36.3	36.6	37.0	37.4	37.8	38.1	38.5
.2	34.8	35.2	35.6	35.9	36.3	36.7	37.1	37.4	37.8	38.2
.3	34.4	34.8	35.2	35.6	36.0	36.4	36.8	37.1	37.5	37.9
.4	34.1	34.5	34.9	35.3	35.7	36.1	36.4	36.8	37.2	37.6
.5	33.8	34.2	34.6	34.9	35.3	35.7	36.1	36.5	36.9	37.2
.6	33.4	33.8	34.2	34.6	35.0	35.4	35.8	36.2	36.5	36.9
.7	33.1	33.5	33.9	34.3	34.7	35.1	35.5	35.8	36.2	36.6
.8	32.7	33.1	33.5	33.9	34.3	34.7	35.1	35.5	35.9	36.3
.9	32.3	32.7	33.2	33.6	34.0	34.4	34.8	35.2	35.6	36.0
30.0	32.0	32.4	32.8	33.2	33.6	34.0	34.4	34.8	35.2	35.6
.1	31.6	32.0	32.4	32.8	33.3	33.7	34.1	34.5	34.9	35.3
.2	31.2	31.6	32.0	32.5	32.9	33.3	33.7	34.1	34.5	34.9
.3	30.8	31.2	31.7	32.1	32.5	32.9	33.4	33.8	34.2	34.6

DIAGONAL 34.0 to 34.9

Half the sum of the bung and head di- ameters.	Inch.									
	34.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
30.4	30.4	30.8	31.3	31.7	32.1	32.6	33.0	33.4	33.8	34.2
.5	30.0	30.4	30.9	31.3	31.8	32.2	32.6	33.0	33.5	33.9
.6	29.6	30.0	30.5	30.9	31.4	31.8	32.2	32.7	33.1	33.5
.7	29.2	29.6	30.1	30.5	31.0	31.4	31.9	32.3	32.7	33.1
.8	28.8	29.2	29.7	30.1	30.6	31.0	31.5	31.9	32.3	32.8
.9	28.3	28.8	29.3	29.7	30.2	30.6	31.1	31.5	32.0	32.4
31.0	27.9	28.4	28.8	29.3	29.8	30.2	30.7	31.1	31.6	32.0
.1	27.4	27.9	28.4	28.9	29.4	29.8	30.3	30.7	31.2	31.6
.2	27.0	27.5	28.0	28.4	28.9	29.4	29.9	30.3	30.8	31.2
.3	26.5	27.0	27.5	28.0	28.5	29.0	29.4	29.9	30.4	30.8
.4	26.0	26.5	27.1	27.6	28.0	28.5	29.0	29.5	30.0	30.4
.5	25.5	26.1	26.6	27.1	27.6	28.1	28.6	29.1	29.5	30.0
.6	25.0	25.6	26.1	26.6	27.1	27.6	28.1	28.6	29.1	29.6
.7	24.5	25.1	25.6	26.1	26.7	27.2	27.7	28.2	28.7	29.1
.8	24.0	24.6	25.1	25.7	26.2	26.7	27.2	27.7	28.2	28.7
.9	23.5	24.0	24.6	25.2	25.7	26.2	26.7	27.3	27.8	28.3
32.0	22.9	23.5	24.1	24.6	25.2	25.7	26.3	26.8	27.3	27.8
.1	22.4	23.0	23.5	24.1	24.7	25.2	25.8	26.3	26.8	27.3
.2	—	22.4	23.0	23.6	24.2	24.7	25.3	25.8	26.4	26.9
.3	—	—	22.4	23.0	23.6	24.2	24.8	25.3	25.9	26.4
.4	—	—	—	22.5	23.1	23.7	24.2	24.8	25.3	25.9
.5	—	—	—	—	22.5	23.1	23.7	24.3	24.8	25.4
.6	—	—	—	—	—	22.5	23.1	23.7	24.3	24.9
.7	—	—	—	—	—	—	22.6	23.2	23.8	24.3
.8	—	—	—	—	—	—	—	22.6	23.2	23.8
.9	—	—	—	—	—	—	—	—	22.6	23.2
33.0	—	—	—	—	—	—	—	—	—	22.7

DIAGONAL 35.0 to 35.9.

Half the sum of the bung and head di- ameters.	inch.									
	35.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
23.7	51.5	—	—	—	—	—	—	—	—	—
.8	51.3	51.5	—	—	—	—	—	—	—	—
.9	51.1	51.4	51.6	—	—	—	—	—	—	—
24.0	50.9	51.2	51.4	51.7	52.0	—	—	—	—	—
.1	50.7	51.0	51.3	51.5	51.8	52.1	—	—	—	—
.2	50.5	50.8	51.1	51.3	51.6	51.9	52.2	—	—	—
.3	50.3	50.6	50.9	51.2	51.4	51.7	52.0	52.3	—	—
.4	50.1	50.4	50.7	51.0	51.2	51.5	51.8	52.1	52.3	52.6
.5	49.9	50.2	50.5	50.8	51.1	51.3	51.6	51.9	52.2	52.4
.6	49.7	50.0	50.3	50.6	50.9	51.1	51.4	51.7	52.0	52.2
.7	49.5	49.8	50.1	50.4	50.7	50.9	51.2	51.5	51.8	52.1
.8	49.3	49.6	49.9	50.2	50.5	50.8	51.0	51.3	51.6	51.9
.9	49.1	49.4	49.7	50.0	50.3	50.6	50.8	51.1	51.4	51.7
25.0	48.9	49.2	49.5	49.8	50.1	50.4	50.6	50.9	51.2	51.5
.1	48.7	49.0	49.3	49.6	49.9	50.2	50.4	50.7	51.0	51.3
.2	48.5	48.8	49.1	49.4	49.7	50.0	50.2	50.5	50.8	51.1
.3	48.3	48.6	48.9	49.2	49.5	49.8	50.0	50.3	50.6	50.9
.4	48.1	48.4	48.7	49.0	49.3	49.6	49.8	50.1	50.4	50.7
.5	47.9	48.2	48.5	48.8	49.1	49.3	49.6	49.9	50.2	50.5
.6	47.7	48.0	48.3	48.6	48.8	49.1	49.4	49.7	50.0	50.3
.7	47.5	47.8	48.1	48.3	48.6	48.9	49.2	49.5	49.8	50.1
.8	47.3	47.5	47.8	48.1	48.4	48.7	49.0	49.3	49.6	49.9
.9	47.0	47.3	47.6	47.9	48.2	48.5	48.8	49.1	49.4	49.7
26.0	46.8	47.1	47.4	47.7	48.0	48.3	48.6	48.9	49.2	49.5
.1	46.6	46.9	47.2	47.5	47.8	48.1	48.4	48.7	49.0	49.2
.2	46.4	46.7	47.0	47.3	47.6	47.9	48.2	48.4	48.7	49.0
.3	46.1	46.4	46.7	47.0	47.3	47.6	47.9	48.2	48.5	48.8
.4	45.9	46.2	46.5	46.8	47.1	47.4	47.7	48.0	48.3	48.6
.5	45.7	46.0	46.3	46.6	46.9	47.2	47.5	47.8	48.1	48.4
.6	45.4	45.8	46.1	46.4	46.7	47.0	47.3	47.6	47.9	48.2
.7	45.2	45.5	45.8	46.1	46.4	46.7	47.0	47.3	47.6	47.9
.8	45.0	45.3	45.6	45.9	46.2	46.5	46.8	47.1	47.4	47.7
.9	44.7	45.0	45.4	45.7	46.0	46.3	46.6	46.9	47.2	47.5
27.0	44.5	44.8	45.1	45.4	45.7	46.0	46.4	46.7	47.0	47.3
.1	44.2	44.6	44.9	45.2	45.5	45.8	46.1	46.4	46.7	47.0
.2	44.0	44.3	44.6	45.0	45.3	45.6	45.9	46.2	46.5	46.8

DIAGONAL 35.0 to 35.9.

Half the sum of the bung and head di- ameters.	Inch.									
	35.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
27.3	43.8	44.1	44.4	44.7	45.0	45.3	45.6	46.0	46.3	46.6
.4	43.5	43.8	44.1	44.5	44.8	45.1	45.4	45.7	46.0	46.3
.5	43.3	43.6	43.9	44.2	44.5	44.8	45.2	45.5	45.8	46.1
.6	43.0	43.3	43.6	44.0	44.3	44.6	44.9	45.2	45.6	45.9
.7	42.7	43.1	43.4	43.7	44.0	44.4	44.7	45.0	45.3	45.6
.8	42.5	42.8	43.1	43.5	43.8	44.1	44.4	44.7	45.1	45.4
.9	42.2	42.5	42.9	43.2	43.5	43.9	44.2	44.5	44.8	45.1
28.0	42.0	42.3	42.6	42.9	43.3	43.6	43.9	44.2	44.6	44.9
.1	41.7	42.0	42.3	42.7	43.0	43.3	43.7	44.0	44.3	44.6
.2	41.4	41.7	42.1	42.4	42.7	43.1	43.4	43.7	44.1	44.4
.3	41.1	41.5	41.8	42.1	42.5	42.8	43.1	43.5	43.8	44.1
.4	40.9	41.2	41.5	41.9	42.2	42.6	42.9	43.2	43.5	43.9
.5	40.6	40.9	41.3	41.6	41.9	42.3	42.6	42.9	43.3	43.6
.6	40.3	40.6	41.0	41.3	41.7	42.0	42.3	42.7	43.0	43.3
.7	40.0	40.4	40.7	41.1	41.4	41.7	42.1	42.4	42.7	43.1
.8	39.7	40.1	40.4	40.8	41.1	41.5	41.8	42.1	42.5	42.8
.9	39.4	39.8	40.1	40.5	40.8	41.2	41.5	41.9	42.2	42.5
29.0	39.1	39.5	39.9	40.2	40.6	40.9	41.2	41.6	41.9	42.3
.1	38.8	39.2	39.6	39.9	40.3	40.6	41.0	41.3	41.7	42.0
.2	38.5	38.9	39.3	39.6	40.0	40.3	40.7	41.0	41.4	41.7
.3	38.2	38.6	39.0	39.3	39.7	40.0	40.4	40.7	41.1	41.4
.4	37.9	38.3	38.7	39.0	39.4	39.7	40.1	40.5	40.8	41.2
.5	37.6	38.0	38.4	38.7	39.1	39.4	39.8	40.2	40.5	40.9
.6	37.3	37.7	38.0	38.4	38.8	39.1	39.5	39.9	40.2	40.6
.7	37.0	37.4	37.7	38.1	38.5	38.8	39.2	39.6	39.9	40.3
.8	36.7	37.0	37.4	37.8	38.2	38.5	38.9	39.3	39.6	40.0
.9	36.3	36.7	37.1	37.5	37.9	38.2	38.6	39.0	39.3	39.7
30.0	36.0	36.4	36.8	37.2	37.5	37.9	38.3	38.7	39.0	39.4
.1	35.7	36.1	36.4	36.8	37.2	37.6	38.0	38.3	38.7	39.1
.2	35.3	35.7	36.1	36.5	36.9	37.3	37.6	38.0	38.4	38.8
.3	35.0	35.4	35.8	36.2	36.6	36.9	37.3	37.7	38.1	38.5
.4	34.6	35.0	35.4	35.8	36.2	36.6	37.0	37.4	37.8	38.1
.5	34.3	34.7	35.1	35.5	35.9	36.3	36.7	37.1	37.4	37.8
.6	33.9	34.3	34.7	35.1	35.5	35.9	36.3	36.7	37.1	37.5
.7	33.6	34.0	34.4	34.8	35.2	35.6	36.0	36.4	36.8	37.2
.8	33.2	33.6	34.0	34.4	34.9	35.3	35.7	36.1	36.4	36.8

DIAGONAL 35.0 to 35.9:

[illegible]

DIAGONAL 36.0 to 36.9.

Half the sum of the bung and head di- ameters.	Inch.										
	36.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.	
24.6	52.5	52.8	—	—	—	—	—	—	—	—	
.7	52.3	52.6	52.9	—	—	—	—	—	—	—	
.8	52.1	52.4	52.7	53.0	53.2	—	—	—	—	—	
.9	51.9	52.2	52.5	52.8	53.1	53.3	—	—	—	—	
25.0	51.8	52.0	52.3	52.6	52.9	53.1	53.4	—	—	—	
.1	51.6	51.8	52.1	52.4	52.7	52.9	53.2	53.5	53.8	—	
.2	51.4	51.6	51.9	52.2	52.5	52.8	53.0	53.3	53.6	53.9	
.3	51.2	51.5	51.7	52.0	52.3	52.6	52.8	53.1	53.4	53.7	
.4	51.0	51.3	51.5	51.8	52.1	52.4	52.7	52.9	53.2	53.5	
.5	50.8	51.1	51.3	51.6	51.9	52.2	52.5	52.7	53.0	53.3	
.6	50.6	50.9	51.1	51.4	51.7	52.0	52.3	52.5	52.8	53.1	
.7	50.4	50.7	50.9	51.2	51.5	51.8	52.1	52.3	52.6	52.9	
.8	50.2	50.5	50.7	51.0	51.3	51.6	51.9	52.2	52.4	52.7	
.9	50.0	50.2	50.5	50.8	51.1	51.4	51.7	52.0	52.2	52.5	
26.0	49.7	50.0	50.3	50.6	50.9	51.2	51.5	51.8	52.0	52.3	
.1	49.5	49.8	50.1	50.4	50.7	51.0	51.3	51.6	51.8	52.1	
.2	49.3	49.6	49.9	50.2	50.5	50.8	51.1	51.3	51.6	51.9	
.3	49.1	49.4	49.7	50.0	50.3	50.6	50.9	51.1	51.4	51.7	
.4	48.9	49.2	49.5	49.8	50.1	50.4	50.6	50.9	51.2	51.5	
.5	48.7	49.0	49.3	49.6	49.9	50.1	50.4	50.7	51.0	51.3	
.6	48.5	48.8	49.1	49.4	49.6	49.9	50.2	50.5	50.8	51.1	
.7	48.2	48.5	48.8	49.1	49.4	49.7	50.0	50.3	50.6	50.9	
.8	48.0	48.3	48.6	48.9	49.2	49.5	49.8	50.1	50.4	50.7	
.9	47.8	48.1	48.4	48.7	49.0	49.3	49.6	49.9	50.2	50.5	
27.0	47.6	47.9	48.2	48.5	48.8	49.1	49.4	49.7	50.0	50.3	
.1	47.3	47.6	48.0	48.3	48.6	48.9	49.1	49.4	49.7	50.0	
.2	47.1	47.4	47.7	48.0	48.3	48.6	48.9	49.2	49.5	49.8	
.3	46.9	47.2	47.5	47.8	48.1	48.4	48.7	49.0	49.3	49.6	
.4	46.7	47.0	47.3	47.6	47.9	48.2	48.5	48.8	49.1	49.4	
.5	46.4	46.7	47.0	47.3	47.6	48.0	48.3	48.6	48.9	49.2	
.6	46.2	46.5	46.8	47.1	47.4	47.7	48.0	48.3	48.6	48.9	
.7	45.9	46.2	46.6	46.9	47.2	47.5	47.8	48.1	48.4	48.7	
.8	45.7	46.0	46.3	46.6	46.9	47.3	47.6	47.9	48.2	48.5	
.9	45.5	45.8	46.1	46.4	46.7	47.0	47.3	47.6	47.9	48.2	
28.0	45.2	45.5	45.8	46.2	46.5	46.8	47.1	47.4	47.7	48.0	
.1	45.0	45.3	45.6	45.9	46.2	46.5	46.9	47.2	47.5	47.8	
.2	44.7	45.0	45.3	45.7	46.0	46.3	46.6	46.9	47.2	47.5	

DIAGONAL 36.0 to 36.9:

Half the sum of the bung and head di- ameters.	Inch. 36.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
28.3	44.5	44.8	45.1	45.4	45.7	46.1	46.4	46.7	47.0	47.3
.4	44.2	44.5	44.8	45.2	45.5	45.8	46.1	46.4	46.8	47.1
.5	43.9	44.3	44.6	44.9	45.2	45.6	45.9	46.2	46.5	46.8
.6	43.7	44.0	44.3	44.7	45.0	45.3	45.6	45.9	46.3	46.6
.7	43.4	43.7	44.1	44.4	44.7	45.1	45.4	45.7	46.0	46.3
.8	43.2	43.5	43.8	44.1	44.5	44.8	45.1	45.4	45.8	46.1
.9	42.9	43.2	43.5	43.9	44.2	44.5	44.9	45.2	45.5	45.8
29.0	42.6	42.9	43.3	43.6	43.9	44.3	44.6	44.9	45.3	45.6
.1	42.3	42.7	43.0	43.3	43.7	44.0	44.3	44.7	45.0	45.3
.2	42.1	42.4	42.7	43.1	43.4	43.8	44.1	44.4	44.7	45.1
.3	41.8	42.1	42.5	42.8	43.1	43.5	43.8	44.1	44.5	44.8
.4	41.5	41.8	42.2	42.5	42.9	43.2	43.5	43.9	44.2	44.5
.5	41.2	41.6	41.9	42.3	42.6	42.9	43.3	43.6	43.9	44.3
.6	40.9	41.3	41.6	42.0	42.3	42.7	43.0	43.3	43.7	44.0
.7	40.6	41.0	41.3	41.7	42.0	42.4	42.7	43.1	43.4	43.7
.8	40.3	40.7	41.1	41.4	41.8	42.1	42.4	42.8	43.1	43.5
.9	40.0	40.4	40.8	41.1	41.5	41.8	42.2	42.5	42.9	43.2
30.0	39.7	40.1	40.5	40.8	41.2	41.5	41.9	42.2	42.6	42.9
.1	39.4	39.8	40.2	40.5	40.9	41.2	41.6	41.9	42.3	42.6
.2	39.1	39.5	39.9	40.2	40.6	40.9	41.3	41.7	42.0	42.4
.3	38.8	39.2	39.6	39.9	40.3	40.7	41.0	41.4	41.7	42.1
.4	38.5	38.9	39.3	39.6	40.0	40.4	40.7	41.1	41.4	41.8
.5	38.2	38.6	38.9	39.3	39.7	40.0	40.4	40.8	41.1	41.5
.6	37.9	38.3	38.6	39.0	39.4	39.7	40.1	40.5	40.8	41.2
.7	37.6	37.9	38.3	38.7	39.1	39.4	39.8	40.2	40.5	40.9
.8	37.2	37.6	38.0	38.4	38.7	39.1	39.5	39.9	40.2	40.6
.9	36.9	37.3	37.7	38.0	38.4	38.8	39.2	39.6	39.9	40.3
31.0	36.6	36.9	37.3	37.7	38.1	38.5	38.9	39.2	39.6	40.0
.1	36.2	36.6	37.0	37.4	37.8	38.2	38.5	38.9	39.3	39.7
.2	35.9	36.3	36.7	37.1	37.4	37.8	38.2	38.6	39.0	39.4
.3	35.5	35.9	36.3	36.7	37.1	37.5	37.9	38.3	38.7	39.0
.4	35.2	35.6	36.0	36.4	36.8	37.2	37.6	37.9	38.3	38.7
.5	34.8	35.2	35.6	36.0	36.4	36.8	37.2	37.6	38.0	38.4
.6	34.4	34.9	35.3	35.7	36.1	36.5	36.9	37.3	37.7	38.1
.7	34.1	34.5	34.9	35.3	35.7	36.1	36.5	36.9	37.3	37.7
.8	33.7	34.1	34.5	35.0	35.4	35.8	36.2	36.6	37.0	37.4

DIAGONAL 36.0 to 36.9:

[illegible]

DIAGONAL 37.0 to 37.9.

Half the sum of the bung and head di- ameters.	Inch. 37.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
24.6	55.2	—	—	—	—	—	—	—	—	—
.7	55.0	55.3	—	—	—	—	—	—	—	—
.8	54.9	55.1	55.4	55.7	—	—	—	—	—	—
.9	54.7	55.0	55.2	55.5	55.8	—	—	—	—	—
25.0	54.5	54.8	55.0	55.3	55.6	55.9	—	—	—	—
.1	54.3	54.6	54.9	55.1	55.4	55.7	55.9	—	—	—
.2	54.1	54.4	54.7	55.0	55.2	55.5	55.8	56.0	56.3	—
.3	53.9	54.2	54.5	54.8	55.0	55.3	55.6	55.8	56.1	56.4
.4	53.8	54.0	54.3	54.6	54.9	55.1	55.4	55.7	55.9	56.2
.5	53.6	53.8	54.1	54.4	54.7	54.9	55.2	55.5	55.8	56.0
.6	53.4	53.7	53.9	54.2	54.5	54.8	55.0	55.3	55.6	55.8
.7	53.2	53.5	53.7	54.0	54.3	54.6	54.8	55.1	55.4	55.7
.8	53.0	53.3	53.5	53.8	54.1	54.4	54.7	54.9	55.2	55.5
.9	52.8	53.1	53.4	53.6	53.9	54.2	54.5	54.7	55.0	55.3
26.0	52.6	52.9	53.2	53.4	53.7	54.0	54.3	54.6	54.8	55.1
.1	52.4	52.7	53.0	53.2	53.5	53.8	54.1	54.4	54.6	54.9
.2	52.2	52.5	52.8	53.0	53.3	53.6	53.9	54.2	54.4	54.7
.3	52.0	52.3	52.6	52.8	53.1	53.4	53.7	54.0	54.3	54.5
.4	51.8	52.1	52.4	52.7	52.9	53.2	53.5	53.8	54.1	54.3
.5	51.6	51.9	52.2	52.4	52.7	53.0	53.3	53.6	53.9	54.1
.6	51.4	51.7	52.0	52.2	52.5	52.8	53.1	53.4	53.7	53.9
.7	51.2	51.5	51.8	52.0	52.3	52.6	52.9	53.2	53.5	53.7
.8	51.0	51.3	51.5	51.8	52.1	52.4	52.7	53.0	53.3	53.5
.9	50.8	51.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1	53.3
27.0	50.5	50.8	51.1	51.4	51.7	52.0	52.3	52.6	52.9	53.1
.1	50.3	50.6	50.9	51.2	51.5	51.8	52.1	52.4	52.7	52.9
.2	50.1	50.4	50.7	51.0	51.3	51.6	51.9	52.2	52.4	52.7
.3	49.9	50.2	50.5	50.8	51.1	51.4	51.7	52.0	52.2	52.5
.4	49.7	50.0	50.3	50.6	50.9	51.2	51.4	51.7	52.0	52.3
.5	49.5	49.8	50.1	50.4	50.6	50.9	51.2	51.5	51.8	52.1
.6	49.2	49.5	49.8	50.1	50.4	50.7	51.0	51.3	51.6	51.9
.7	49.0	49.3	49.6	49.9	50.2	50.5	50.8	51.1	51.4	51.7
.8	48.8	49.1	49.4	49.7	50.0	50.3	50.6	50.9	51.2	51.5
.9	48.6	48.9	49.2	49.5	49.8	50.1	50.4	50.7	51.0	51.3
28.0	48.3	48.6	48.9	49.2	49.5	49.8	50.1	50.4	50.7	51.0
.1	48.1	48.4	48.7	49.0	49.3	49.6	49.9	50.2	50.5	50.8
.2	47.9	48.2	48.5	48.8	49.1	49.4	49.7	50.0	50.3	50.6

DIAGONAL 37.0 to 37.9.

Half the sum of the bung and head di- ameters.	Inch. 37.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
28.3	47.6	47.9	48.2	48.5	48.9	49.2	49.5	49.8	50.1	50.4
.4	47.4	47.7	48.0	48.3	48.6	48.9	49.2	49.5	49.8	50.1
.5	47.1	47.5	47.8	48.1	48.4	48.7	49.0	49.3	49.6	49.9
.6	46.9	47.2	47.5	47.8	48.1	48.5	48.8	49.1	49.4	49.7
.7	46.7	47.0	47.3	47.6	47.9	48.2	48.5	48.8	49.1	49.5
.8	46.4	46.7	47.0	47.4	47.7	48.0	48.3	48.6	48.9	49.2
.9	46.2	46.5	46.8	47.1	47.4	47.7	48.1	48.4	48.7	49.0
29.0	45.9	46.2	46.5	46.9	47.2	47.5	47.8	48.1	48.4	48.8
.1	45.7	46.0	46.3	46.6	46.9	47.3	47.6	47.9	48.2	48.5
.2	45.4	45.7	46.0	46.4	46.7	47.0	47.3	47.6	48.0	48.3
.3	45.1	45.5	45.8	46.1	46.4	46.8	47.1	47.4	47.7	48.0
.4	44.9	45.2	45.5	45.9	46.2	46.5	46.8	47.1	47.5	47.8
.5	44.6	44.9	45.3	45.6	45.9	46.3	46.6	46.9	47.2	47.5
.6	44.4	44.7	45.0	45.3	45.7	46.0	46.3	46.6	47.0	47.3
.7	44.1	44.4	44.7	45.1	45.4	45.7	46.1	46.4	46.7	47.0
.8	43.8	44.1	44.5	44.8	45.1	45.5	45.8	46.1	46.5	46.8
.9	43.5	43.9	44.2	44.5	44.9	45.2	45.5	45.9	46.2	46.5
30.0	43.3	43.6	43.9	44.3	44.6	45.0	45.3	45.6	45.9	46.3
.1	43.0	43.3	43.7	44.0	44.3	44.7	45.0	45.3	45.7	46.0
.2	42.7	43.0	43.4	43.7	44.1	44.4	44.7	45.1	45.4	45.7
.3	42.4	42.8	43.1	43.5	43.8	44.1	44.5	44.8	45.1	45.5
.4	42.1	42.5	42.8	43.2	43.5	43.9	44.2	44.5	44.9	45.2
.5	41.8	42.2	42.5	42.9	43.2	43.6	43.9	44.3	44.6	44.9
.6	41.6	41.9	42.3	42.6	43.0	43.3	43.6	44.0	44.3	44.7
.7	41.3	41.6	42.0	42.3	42.7	43.0	43.4	43.7	44.1	44.4
.8	41.0	41.3	41.7	42.0	42.4	42.7	43.1	43.4	43.8	44.1
.9	40.7	41.0	41.4	41.7	42.1	42.4	42.8	43.1	43.5	43.8
31.0	40.3	40.7	41.1	41.4	41.8	42.2	42.5	42.9	43.2	43.6
.1	40.0	40.4	40.8	41.1	41.5	41.9	42.2	42.6	42.9	43.3
.2	39.7	40.1	40.5	40.8	41.2	41.6	41.9	42.3	42.6	43.0
.3	39.4	39.8	40.2	40.5	40.9	41.3	41.6	42.0	42.3	42.7
.4	39.1	39.5	39.8	40.2	40.6	41.0	41.3	41.7	42.0	42.4
.5	38.8	39.2	39.5	39.9	40.3	40.6	41.0	41.4	41.7	42.1
.6	38.4	38.8	39.2	39.6	40.0	40.3	40.7	41.1	41.4	41.8
.7	38.1	38.5	38.9	39.3	39.6	40.0	40.4	40.8	41.1	41.5
.8	37.8	38.2	38.6	38.9	39.3	39.7	40.1	40.4	40.8	41.2
.9	37.4	37.8	38.2	38.6	39.0	39.4	39.8	40.1	40.5	40.9

DIAGONAL 37.0 to 37.9:

Half the sum of the bung and head di- ameters.		Inch.									
		37.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.	L.
32.0	37.1	37.5	37.9	38.3	38.7	39.1	39.4	39.8	40.2	40.6	
.1	36.8	37.2	37.5	37.9	38.3	38.7	39.1	39.5	39.9	40.2	
.2	36.4	36.8	37.2	37.6	38.0	38.4	38.8	39.2	39.5	39.9	
.3	36.0	36.5	36.9	37.3	37.7	38.1	38.4	38.8	39.2	39.6	
.4	35.7	36.1	36.5	36.9	37.3	37.7	38.1	38.5	38.9	39.3	
.5	35.3	35.7	36.1	36.6	37.0	37.4	37.8	38.2	38.6	38.9	
.6	34.9	35.4	35.8	36.2	36.6	37.0	37.4	37.8	38.2	38.6	
.7	34.6	35.0	35.4	35.8	36.3	36.7	37.1	37.5	37.9	38.3	
.8	34.2	34.6	35.0	35.5	35.9	36.3	36.7	37.1	37.5	37.9	
.9	33.8	34.2	34.7	35.1	35.5	35.9	36.4	36.8	37.2	37.6	
33.0	33.4	33.9	34.3	34.7	35.2	35.6	36.0	36.4	36.8	37.2	
.1	33.0	33.5	33.9	34.3	34.8	35.2	35.6	36.0	36.5	36.9	
.2	32.6	33.1	33.5	34.0	34.4	34.8	35.2	35.7	36.1	36.5	
.3	32.2	32.7	33.1	33.6	34.0	34.4	34.9	35.3	35.7	36.1	
.4	31.8	32.3	32.7	33.2	33.6	34.0	34.5	34.9	35.3	35.8	
.5	31.4	31.8	32.3	32.8	33.2	33.7	34.1	34.5	35.0	35.4	
.6	30.9	31.4	31.9	32.3	32.8	33.3	33.7	34.1	34.6	35.0	
.7	30.5	31.0	31.5	31.9	32.4	32.8	33.3	33.7	34.2	34.6	
.8	30.1	30.5	31.0	31.5	32.0	32.4	32.9	33.3	33.8	34.2	
.9	29.6	30.1	30.6	31.1	31.5	32.0	32.5	32.9	33.4	33.8	
34.0	29.1	29.6	30.1	30.6	31.1	31.6	32.1	32.5	33.0	33.4	
.1	28.7	29.2	29.7	30.2	30.7	31.2	31.6	32.1	32.6	33.0	
.2	28.2	28.7	29.2	29.7	30.2	30.7	31.2	31.7	32.1	32.6	
.3	27.7	28.2	28.7	29.3	29.8	30.3	30.8	31.2	31.7	32.2	
.4	27.2	27.7	28.3	28.8	29.3	29.8	30.3	30.8	31.3	31.8	
.5	26.7	27.2	27.8	28.3	28.8	29.3	29.9	30.4	30.8	31.3	
.6	26.2	26.7	27.3	27.8	28.3	28.9	29.4	29.9	30.4	30.9	
.7	25.6	26.2	26.8	27.3	27.9	28.4	28.9	29.4	29.9	30.4	
.8	25.1	25.7	26.2	26.8	27.4	27.9	28.4	29.0	29.5	30.0	
.9	24.5	25.1	25.7	26.3	26.8	27.4	27.9	28.5	29.0	29.5	
35.0	24.0	24.6	25.2	25.7	26.3	26.9	27.4	28.0	28.5	29.0	
.1	—	24.0	24.6	25.2	25.8	26.4	26.9	27.5	28.0	28.5	
.2	—	—	24.0	24.6	25.2	25.8	26.4	27.0	27.5	28.0	
.3	—	—	—	24.0	24.7	25.3	25.8	26.4	27.0	27.5	
.4	—	—	—	—	24.1	24.7	25.3	25.9	26.5	27.0	
.5	—	—	—	—	—	—	24.7	25.3	25.9	26.5	
.6	—	—	—	—	—	—	—	24.8	25.4	26.0	
.7	—	—	—	—	—	—	—	—	24.8	25.4	
.8	—	—	—	—	—	—	—	—	—	24.8	

(51)

DIAGONAL 38.0 to 38.9.

Half the sum of the bung and head di- ameters.	Inch. 38.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
24.8	57.5	—	—	—	—	—	—	—	—	—
.9	57.4	57.6	—	—	—	—	—	—	—	—
25.0	57.2	57.5	57.7	—	—	—	—	—	—	—
.1	57.0	57.3	57.5	57.8	—	—	—	—	—	—
.2	56.8	57.1	57.4	57.6	57.9	—	—	—	—	—
.3	56.7	56.9	57.2	57.5	57.7	58.0	—	—	—	—
.4	56.5	56.7	57.0	57.3	57.5	57.8	58.1	58.3	—	—
.5	56.3	56.6	56.8	57.1	57.4	57.6	57.9	58.2	58.4	—
.6	56.1	56.4	56.7	56.9	57.2	57.5	57.7	58.0	58.3	58.5
.7	55.9	56.2	56.5	56.7	57.0	57.3	57.6	57.8	58.1	58.4
.8	55.7	56.0	56.3	56.6	56.8	57.1	57.4	57.6	57.9	58.2
.9	55.6	55.8	56.1	56.4	56.7	56.9	57.2	57.5	57.7	58.0
26.0	55.4	55.6	55.9	56.2	56.5	56.7	57.0	57.3	57.6	57.8
.1	55.2	55.5	55.7	56.0	56.3	56.6	56.8	57.1	57.4	57.6
.2	55.0	55.3	55.5	55.8	56.1	56.4	56.6	56.9	57.2	57.5
.3	54.8	55.1	55.4	55.6	55.9	56.2	56.5	56.7	57.0	57.3
.4	54.6	54.9	55.2	55.4	55.7	56.0	56.3	56.5	56.8	57.1
.5	54.4	54.7	55.0	55.3	55.5	55.8	56.1	56.4	56.6	56.9
.6	54.2	54.5	54.8	55.1	55.3	55.6	55.9	56.2	56.4	56.7
.7	54.0	54.3	54.6	54.9	55.1	55.4	55.7	56.0	56.3	56.5
.8	53.8	54.1	54.4	54.7	55.0	55.2	55.5	55.8	56.1	56.3
.9	53.6	53.9	54.2	54.5	54.8	55.0	55.3	55.6	55.9	56.1
27.0	53.4	53.7	54.0	54.3	54.6	54.8	55.1	55.4	55.7	56.0
.1	53.2	53.5	53.8	54.1	54.4	54.6	54.9	55.2	55.5	55.8
.2	53.0	53.3	53.6	53.9	54.2	54.4	54.7	55.0	55.3	55.6
.3	52.8	53.1	53.4	53.7	54.0	54.2	54.5	54.8	55.1	55.4
.4	52.6	52.9	53.2	53.5	53.8	54.0	54.3	54.6	54.9	55.2
.5	52.4	52.7	53.0	53.3	53.6	53.8	54.1	54.4	54.7	55.0
.6	52.2	52.5	52.8	53.1	53.3	53.6	53.9	54.2	54.5	54.8
.7	52.0	52.3	52.6	52.8	53.1	53.4	53.7	54.0	54.3	54.6
.8	51.8	52.1	52.3	52.6	52.9	53.2	53.5	53.8	54.1	54.4
.9	51.5	51.8	52.1	52.4	52.7	53.0	53.3	53.6	53.9	54.2
28.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1	53.4	53.7	54.0
.1	51.1	51.4	51.7	52.0	52.3	52.6	52.9	53.2	53.5	53.7
.2	50.9	51.2	51.5	51.8	52.1	52.4	52.7	53.0	53.2	53.5
.3	50.7	51.0	51.3	51.6	51.9	52.2	52.5	52.7	53.0	53.3
.4	50.4	50.7	51.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1

DIAGONAL 38.0 to 38.9.

Half the sum of the bung and head di- ameters.	Inch. 38.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
28.5	50.2	50.5	50.8	51.1	51.4	51.7	52.0	52.3	52.6	52.9
.6	50.0	50.3	50.6	50.9	51.2	51.5	51.8	52.1	52.4	52.7
.7	49.8	50.1	50.4	50.7	51.0	51.3	51.6	51.9	52.2	52.5
.8	49.5	49.8	50.1	50.4	50.7	51.1	51.4	51.7	52.0	52.2
.9	49.3	49.6	49.9	50.2	50.5	50.8	51.1	51.4	51.7	52.0
29.0	49.1	49.4	49.7	50.0	50.3	50.6	50.9	51.2	51.5	51.8
.1	48.8	49.1	49.4	49.8	50.1	50.4	50.7	51.0	51.3	51.6
.2	48.6	48.9	49.2	49.5	49.8	50.1	50.4	50.7	51.0	51.4
.3	48.3	48.7	49.0	49.3	49.6	49.9	50.2	50.5	50.8	51.1
.4	48.1	48.4	48.7	49.0	49.4	49.7	50.0	50.3	50.6	50.9
.5	47.9	48.2	48.5	48.8	49.1	49.4	49.7	50.0	50.4	50.7
.6	47.6	47.9	48.2	48.6	48.9	49.2	49.5	49.8	50.1	50.4
.7	47.4	47.7	48.0	48.3	48.6	48.9	49.3	49.6	49.9	50.2
.8	47.1	47.4	47.7	48.1	48.4	48.7	49.0	49.3	49.6	50.0
.9	46.9	47.2	47.5	47.8	48.1	48.5	48.8	49.1	49.4	49.7
30.0	46.6	46.9	47.2	47.6	47.9	48.2	48.5	48.8	49.2	49.5
.1	46.3	46.7	47.0	47.3	47.6	48.0	48.3	48.6	48.9	49.2
.2	46.1	46.4	46.7	47.1	47.4	47.7	48.0	48.4	48.7	49.0
.3	45.8	46.1	46.5	46.8	47.1	47.5	47.8	48.1	48.4	48.7
.4	45.6	45.9	46.2	46.5	46.9	47.2	47.5	47.8	48.2	48.5
.5	45.3	45.6	45.9	46.3	46.6	46.9	47.3	47.6	47.9	48.2
.6	45.0	45.3	45.7	46.0	46.3	46.7	47.0	47.3	47.7	48.0
.7	44.7	45.1	45.4	45.7	46.1	46.4	46.7	47.1	47.4	47.7
.8	44.5	44.8	45.1	45.5	45.8	46.2	46.5	46.8	47.1	47.5
.9	44.2	44.5	44.9	45.2	45.5	45.9	46.2	46.5	46.9	47.2
31.0	43.9	44.2	44.6	44.9	45.3	45.6	45.9	46.3	46.6	46.9
.1	43.6	44.0	44.3	44.7	45.0	45.3	45.7	46.0	46.3	46.7
.2	43.3	43.7	44.0	44.4	44.7	45.1	45.4	45.7	46.1	46.4
.3	43.0	43.4	43.7	44.1	44.4	44.8	45.1	45.5	45.8	46.1
.4	42.8	43.1	43.5	43.8	44.2	44.5	44.8	45.2	45.5	45.9
.5	42.5	42.8	43.2	43.5	43.9	44.2	44.6	44.9	45.3	45.6
.6	42.2	42.5	42.9	43.2	43.6	43.9	44.3	44.6	45.0	45.3
.7	41.9	42.2	42.6	42.9	43.3	43.6	44.0	44.3	44.7	45.0
.8	41.6	41.9	42.3	42.6	43.0	43.4	43.7	44.1	44.4	44.8
.9	41.2	41.6	42.0	42.3	42.7	43.1	43.4	43.8	44.1	44.5
32.0	40.9	41.3	41.7	42.0	42.4	42.8	43.1	43.5	43.8	44.2
.1	40.6	41.0	41.4	41.7	42.1	42.5	42.8	43.2	43.5	43.9

DIAGONAL 38.0 to 38.9:

Half the sum of the bung and head di- ameters.	Inch. 38.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
32.2	40.3	40.7	41.1	41.4	41.8	42.2	42.5	42.9	43.2	43.6
.3	40.0	40.4	40.7	41.1	41.5	41.9	42.2	42.6	42.9	43.3
.4	39.7	40.0	40.4	40.8	41.2	41.5	41.9	42.3	42.6	43.0
.5	39.3	39.7	40.1	40.5	40.9	41.2	41.6	42.0	42.3	42.7
.6	39.0	39.4	39.8	40.2	40.5	40.9	41.3	41.7	42.0	42.4
.7	38.7	39.1	39.4	39.8	40.2	40.6	41.0	41.3	41.7	42.1
.8	38.3	38.7	39.1	39.5	39.9	40.3	40.6	41.0	41.4	41.8
.9	38.0	38.4	38.8	39.2	39.6	39.9	40.3	40.7	41.1	41.5
33.0	37.6	38.0	38.4	38.8	39.2	39.6	40.0	40.4	40.8	41.1
.1	37.3	37.7	38.1	38.5	38.9	39.3	39.7	40.1	40.4	40.8
.2	36.9	37.3	37.7	38.1	38.5	38.9	39.3	39.7	40.1	40.5
.3	36.6	37.0	37.4	37.8	38.2	38.6	39.0	39.4	39.8	40.2
.4	36.2	36.6	37.0	37.4	37.8	38.2	38.6	39.0	39.4	39.8
.5	35.8	36.2	36.7	37.1	37.5	37.9	38.3	38.7	39.1	39.5
.6	35.4	35.9	36.3	36.7	37.1	37.5	38.0	38.4	38.8	39.2
.7	35.1	35.5	35.9	36.3	36.8	37.2	37.6	38.0	38.4	38.8
.8	34.7	35.1	35.5	36.0	36.4	36.8	37.2	37.6	38.1	38.5
.9	34.3	34.7	35.2	35.6	36.0	36.4	36.9	37.3	37.7	38.1
34.0	33.9	34.3	34.8	35.2	35.6	36.1	36.5	36.9	37.3	37.8
.1	33.5	33.9	34.4	34.8	35.3	35.7	36.1	36.5	37.0	37.4
.2	33.1	33.5	34.0	34.4	34.9	35.3	35.7	36.2	36.6	37.0
.3	32.7	33.1	33.6	34.0	34.5	34.9	35.4	35.8	36.2	36.6
.4	32.2	32.7	33.2	33.6	34.1	34.5	35.0	35.4	35.8	36.3
.5	31.8	32.3	32.8	33.2	33.7	34.1	34.6	35.0	35.5	35.9
.6	31.4	31.9	32.3	32.8	33.3	33.7	34.2	34.6	35.1	35.5
.7	30.9	31.4	31.9	32.4	32.8	33.3	33.8	34.2	34.7	35.1
.8	30.5	31.0	31.5	31.9	32.4	32.9	33.4	33.8	34.3	34.7
.9	30.0	30.5	31.0	31.5	32.0	32.5	32.9	33.4	33.9	34.3
35.0	29.5	30.1	30.6	31.1	31.5	32.0	32.5	33.0	33.4	33.9
.1	29.1	29.6	30.1	30.6	31.1	31.6	32.1	32.5	33.0	33.5
.2	28.6	29.1	29.6	30.1	30.6	31.1	31.6	32.1	32.6	33.1
.3	28.1	28.6	29.1	29.7	30.2	30.7	31.2	31.7	32.2	32.6
.4	27.6	28.1	28.7	29.2	29.7	30.2	30.7	31.2	31.7	32.2
.5	27.1	27.6	28.2	28.7	29.2	29.7	30.3	30.8	31.3	31.8
.6	26.5	27.1	27.7	28.2	28.7	29.3	29.8	30.3	30.8	31.3
.7	26.0	26.6	27.1	27.7	28.2	28.8	29.3	29.8	30.3	30.9

DIAGONAL 38.0 to 38.9.

Half the sum of the bung and head di- ameters.	Inch. 38.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
35.8	25.4	26.0	26.6	27.2	27.7	28.3	28.8	29.3	29.9	30.4
.9	24.9	25.5	26.1	26.6	27.2	27.8	28.3	28.9	29.4	29.9
36.0	—	24.9	25.5	26.1	26.7	27.2	27.8	28.4	28.9	29.4
.1	—	—	24.9	25.5	26.1	26.7	27.3	27.8	28.4	28.9
.2	—	—	—	25.0	25.6	26.2	26.7	27.3	27.9	28.4
.3	—	—	—	—	25.0	25.6	26.2	26.8	27.4	27.9
.4	—	—	—	—	—	25.0	25.6	26.2	26.8	27.4
.5	—	—	—	—	—	—	25.1	25.7	26.3	26.9
.6	—	—	—	—	—	—	—	25.1	25.7	26.3
.7	—	—	—	—	—	—	—	—	25.1	25.7
.8	—	—	—	—	—	—	—	—	—	25.2

DIAGONAL 39.0 to 39.9.

Half the sum of the bung and head di- ameters.	Inch. 39.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
25.1	59.6	59.9	—	—	—	—	—	—	—	—
.2	59.5	59.7	60.0	—	—	—	—	—	—	—
.3	59.3	59.6	59.8	60.1	—	—	—	—	—	—
.4	59.1	59.4	59.7	59.9	60.2	60.5	—	—	—	—
.5	59.0	59.2	59.5	59.8	60.0	60.3	60.5	—	—	—
.6	58.8	59.1	59.3	59.6	59.8	60.1	60.4	60.6	60.9	—
.7	58.6	58.9	59.1	59.4	59.7	59.9	60.2	60.5	60.7	61.0
.8	58.4	58.7	59.0	59.2	59.5	59.8	60.0	60.3	60.6	60.8
.9	58.3	58.5	58.8	59.1	59.3	59.6	59.9	60.1	60.4	60.7
26.0	58.1	58.4	58.6	58.9	59.2	59.4	59.7	60.0	60.2	60.5
.1	57.9	58.2	58.4	58.7	59.0	59.2	59.5	59.8	60.0	60.3
.2	57.7	58.0	58.3	58.5	58.8	59.1	59.3	59.6	59.9	60.1
.3	57.5	57.8	58.1	58.4	58.6	58.9	59.2	59.4	59.7	60.0
.4	57.4	57.6	57.9	58.2	58.4	58.7	59.0	59.3	59.5	59.8
.5	57.2	57.4	57.7	58.0	58.3	58.5	58.8	59.1	59.3	59.6

DIAGONAL 39.0 to 39.9.

Half the sum of the bung and head di- ameters.	Inch.									
	39.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
26.6	57.0	57.3	57.5	57.8	58.1	58.4	58.6	58.9	59.2	59.4
.7	56.8	57.1	57.4	57.6	57.9	58.2	58.4	58.7	59.0	59.2
.8	56.6	56.9	57.2	57.4	57.7	58.0	58.3	58.5	58.8	59.1
.9	56.4	56.7	57.0	57.3	57.5	57.8	58.1	58.3	58.6	58.9
27.0	56.2	56.5	56.8	57.1	57.3	57.6	57.9	58.2	58.4	58.7
.1	56.0	56.3	56.6	56.9	57.1	57.4	57.7	58.0	58.2	58.5
.2	55.8	56.1	56.4	56.7	57.0	57.2	57.5	57.8	58.1	58.3
.3	55.7	55.9	56.2	56.5	56.8	57.0	57.3	57.6	57.9	58.1
.4	55.5	55.7	56.0	56.3	56.6	56.9	57.1	57.4	57.7	58.0
.5	55.3	55.5	55.8	56.1	56.4	56.7	56.9	57.2	57.5	57.8
.6	55.1	55.3	55.6	55.9	56.2	56.5	56.7	57.0	57.3	57.6
.7	54.9	55.1	55.4	55.7	56.0	56.3	56.5	56.8	57.1	57.4
.8	54.7	54.9	55.2	55.5	55.8	56.1	56.4	56.6	56.9	57.2
.9	54.5	54.7	55.0	55.3	55.6	55.9	56.2	56.4	56.7	57.0
28.0	54.2	54.5	54.8	55.1	55.4	55.7	56.0	56.2	56.5	56.8
.1	54.0	54.3	54.6	54.9	55.2	55.5	55.8	56.0	56.3	56.6
.2	53.8	54.1	54.4	54.7	55.0	55.3	55.6	55.8	56.1	56.4
.3	53.6	53.9	54.2	54.5	54.8	55.1	55.3	55.6	55.9	56.2
.4	53.4	53.7	54.0	54.3	54.6	54.9	55.1	55.4	55.7	56.0
.5	53.2	53.5	53.8	54.1	54.4	54.6	54.9	55.2	55.5	55.8
.6	53.0	53.3	53.6	53.9	54.1	54.4	54.7	55.0	55.3	55.6
.7	52.8	53.1	53.4	53.6	53.9	54.2	54.5	54.8	55.1	55.4
.8	52.5	52.8	53.1	53.4	53.7	54.0	54.3	54.6	54.9	55.2
.9	52.3	52.6	52.9	53.2	53.5	53.8	54.1	54.4	54.7	55.0
29.0	52.1	52.4	52.7	53.0	53.3	53.6	53.9	54.2	54.5	54.8
.1	51.9	52.2	52.5	52.8	53.1	53.4	53.7	54.0	54.3	54.5
.2	51.7	52.0	52.3	52.6	52.9	53.2	53.4	53.7	54.0	54.3
.3	51.4	51.7	52.0	52.3	52.6	52.9	53.2	53.5	53.8	54.1
.4	51.2	51.5	51.8	52.1	52.4	52.7	53.0	53.3	53.6	53.9
.5	51.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1	53.4	53.7
.6	50.7	51.0	51.3	51.7	52.0	52.3	52.6	52.9	53.2	53.5
.7	50.5	50.8	51.1	51.4	51.7	52.0	52.3	52.6	52.9	53.2
.8	50.3	50.6	50.9	51.2	51.5	51.8	52.1	52.4	52.7	53.0
.9	50.0	50.3	50.7	51.0	51.3	51.6	51.9	52.2	52.5	52.8
30.0	49.8	50.1	50.4	50.7	51.0	51.3	51.6	52.0	52.3	52.6
.1	49.5	49.9	50.2	50.5	50.8	51.1	51.4	51.7	52.0	52.3

DIAGONAL 39.0 to 39.9.

Half the sum of the bung and head di- ameters.	Inch. 39.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
30.2	49.3	49.6	49.9	50.2	50.6	50.9	51.2	51.5	51.8	52.1
.3	49.1	49.4	49.7	50.0	50.3	50.6	50.9	51.3	51.6	51.9
.4	48.8	49.1	49.4	49.8	50.1	50.4	50.7	51.0	51.3	51.6
.5	48.6	48.9	49.2	49.5	49.8	50.1	50.5	50.8	51.1	51.4
.6	48.3	48.6	49.0	49.3	49.6	49.9	50.2	50.5	50.8	51.2
.7	48.1	48.4	48.7	49.0	49.3	49.7	50.0	50.3	50.6	50.9
.8	47.8	48.1	48.4	48.8	49.1	49.4	49.7	50.0	50.4	50.7
.9	47.5	47.9	48.2	48.5	48.8	49.2	49.5	49.8	50.1	50.4
31.0	47.3	47.6	47.9	48.3	48.6	48.9	49.2	49.6	49.9	50.2
.1	47.0	47.3	47.7	48.0	48.3	48.7	49.0	49.3	49.6	49.9
.2	46.8	47.1	47.4	47.7	48.1	48.4	48.7	49.0	49.4	49.7
.3	46.5	46.8	47.1	47.5	47.8	48.1	48.5	48.8	49.1	49.4
.4	46.2	46.5	46.9	47.2	47.5	47.9	48.2	48.5	48.9	49.2
.5	45.9	46.3	46.6	46.9	47.3	47.6	47.9	48.3	48.6	48.9
.6	45.7	46.0	46.3	46.7	47.0	47.4	47.7	48.0	48.3	48.7
.7	45.4	45.7	46.1	46.4	46.7	47.1	47.4	47.7	48.1	48.4
.8	45.1	45.5	45.8	46.1	46.5	46.8	47.1	47.5	47.8	48.1
.9	44.8	45.2	45.5	45.9	46.2	46.5	46.9	47.2	47.5	47.9
32.0	44.5	44.9	45.2	45.6	45.9	46.3	46.6	46.9	47.3	47.6
.1	44.2	44.6	44.9	45.3	45.6	46.0	46.3	46.7	47.0	47.3
.2	44.0	44.3	44.7	45.0	45.4	45.7	46.1	46.4	46.7	47.1
.3	43.7	44.0	44.4	44.7	45.1	45.4	45.8	46.1	46.5	46.8
.4	43.4	43.7	44.1	44.4	44.8	45.1	45.5	45.8	46.2	46.5
.5	43.1	43.4	43.8	44.1	44.5	44.8	45.2	45.6	45.9	46.2
.6	42.8	43.1	43.5	43.8	44.2	44.6	44.9	45.3	45.6	46.0
.7	42.5	42.8	43.2	43.5	43.9	44.3	44.6	45.0	45.3	45.7
.8	42.1	42.5	42.9	43.2	43.6	44.0	44.3	44.7	45.0	45.4
.9	41.8	42.2	42.6	42.9	43.3	43.7	44.0	44.4	44.7	45.1
33.0	41.5	41.9	42.3	42.6	43.0	43.4	43.7	44.1	44.4	44.8
.1	41.2	41.6	42.0	42.3	42.7	43.1	43.4	43.8	44.2	44.5
.2	40.9	41.3	41.6	42.0	42.4	42.8	43.1	43.5	43.8	44.2
.3	40.6	40.9	41.3	41.7	42.1	42.4	42.8	43.2	43.5	43.9
.4	40.2	40.6	41.0	41.4	41.7	42.1	42.5	42.9	43.2	43.6
.5	39.9	40.3	40.7	41.0	41.4	41.8	42.2	42.6	42.9	43.3
.6	39.6	39.9	40.3	40.7	41.1	41.5	41.9	42.2	42.6	43.0
.7	39.2	39.6	40.0	40.4	40.8	41.2	41.5	41.9	42.3	42.7
.8	38.9	39.3	39.7	40.1	40.4	40.8	41.2	41.6	42.0	42.4

DIAGONAL 39.0 to 39.9

Half the sum of the bung and head di- ameters.	Inch.									
	39.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
33.9	38.5	38.9	39.3	39.7	40.1	40.5	40.9	41.3	41.7	42.0
34.0	38.2	38.6	39.0	39.4	39.8	40.2	40.6	40.9	41.3	41.7
.1	37.8	38.2	38.6	39.0	39.4	39.8	40.2	40.6	41.0	41.4
.2	37.4	37.9	38.3	38.7	39.1	39.5	39.9	40.3	40.7	41.1
.3	37.1	37.5	37.9	38.3	38.7	39.1	39.5	39.9	40.3	40.7
.4	36.7	37.1	37.5	38.0	38.4	38.8	39.2	39.6	40.0	40.4
.5	36.3	36.8	37.2	37.6	38.0	38.4	38.8	39.2	39.6	40.0
.6	35.9	36.4	36.8	37.2	37.6	38.1	38.5	38.9	39.3	39.7
.7	35.6	36.0	36.4	36.8	37.3	37.7	38.1	38.5	38.9	39.3
.8	35.2	35.6	36.0	36.5	36.9	37.3	37.7	38.2	38.6	39.0
.9	34.8	35.2	35.7	36.1	36.5	36.9	37.4	37.8	38.2	38.6
35.0	34.4	34.8	35.3	35.7	36.1	36.6	37.0	37.4	37.8	38.3
.1	33.9	34.4	34.9	35.3	35.7	36.2	36.6	37.0	37.5	37.9
.2	33.5	34.0	34.5	34.9	35.4	35.8	36.2	36.7	37.1	37.5
.3	33.1	33.6	34.0	34.5	35.0	35.4	35.8	36.3	36.7	37.1
.4	32.7	33.2	33.6	34.1	34.5	35.0	35.4	35.9	36.3	36.8
.5	32.2	32.7	33.2	33.7	34.1	34.6	35.0	35.5	35.9	36.4
.6	31.8	32.3	32.8	33.2	33.7	34.2	34.6	35.1	35.5	36.0
.7	31.4	31.8	32.3	32.8	33.3	33.8	34.2	34.7	35.1	35.6
.8	30.9	31.4	31.9	32.4	32.9	33.3	33.8	34.3	34.7	35.2
.9	30.4	30.9	31.4	31.9	32.4	32.9	33.4	33.8	34.3	34.8
36.0	30.0	30.5	31.0	31.5	32.0	32.5	32.9	33.4	33.9	34.4
.1	29.5	30.0	30.5	31.0	31.5	32.0	32.5	33.0	33.5	33.9
.2	29.0	29.5	30.0	30.5	31.1	31.6	32.1	32.5	33.0	33.5
.3	28.5	29.0	29.5	30.1	30.6	31.1	31.6	32.1	32.6	33.1
.4	28.0	28.5	29.0	29.6	30.1	30.6	31.1	31.6	32.1	32.6
.5	27.4	28.0	28.5	29.1	29.6	30.1	30.7	31.2	31.7	32.2
.6	26.9	27.5	28.0	28.6	29.1	29.7	30.2	30.7	31.2	31.7
.7	26.3	26.9	27.5	28.1	28.6	29.2	29.7	30.2	30.7	31.3
.8	25.8	26.4	27.0	27.5	28.1	28.7	29.2	29.7	30.3	30.8
.9	25.2	25.8	26.4	27.0	27.6	28.1	28.7	29.2	29.8	30.3
37.0	—	25.2	25.8	26.4	27.0	27.6	28.2	28.7	29.3	29.8
.1	—	—	25.3	25.9	26.5	27.1	27.6	28.2	28.8	29.3
.2	—	—	—	25.3	25.9	26.5	27.1	27.7	28.2	28.8
.3	—	—	—	—	—	25.9	26.5	27.1	27.7	28.3
.4	—	—	—	—	—	—	26.0	26.6	27.2	27.8
.5	—	—	—	—	—	—	—	26.0	26.6	27.2
.6	—	—	—	—	—	—	—	—	26.0	26.7
.7	—	—	—	—	—	—	—	—	—	26.1

DIAGONAL 40.0 to 40.9.

Half the sum of the bung and head di- ameters.	Inch. 40.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
25.2	62.1	—	—	—	—	—	—	—	—	—
.3	61.9	62.2	—	—	—	—	—	—	—	—
.4	61.8	62.0	62.3	—	—	—	—	—	—	—
.5	61.6	61.8	62.1	62.4	—	—	—	—	—	—
.6	61.4	61.7	61.9	62.2	62.5	—	—	—	—	—
.7	61.3	61.5	61.8	62.0	62.3	62.6	62.8	—	—	—
.8	61.1	61.3	61.6	61.9	62.1	62.4	62.6	62.9	—	—
.9	60.9	61.2	61.4	61.7	62.0	62.2	62.5	62.7	63.0	—
26.0	60.7	61.0	61.3	61.5	61.8	62.1	62.3	62.6	62.8	63.1
.1	60.6	60.8	61.1	61.4	61.6	61.9	62.1	62.4	62.7	62.9
.2	60.4	60.7	60.9	61.2	61.5	61.7	62.0	62.2	62.5	62.8
.3	60.2	60.5	60.8	61.0	61.3	61.5	61.8	62.1	62.3	62.6
.4	60.1	60.3	60.6	60.8	61.1	61.4	61.6	61.9	62.2	62.4
.5	59.9	60.1	60.4	60.7	60.9	61.2	61.5	61.7	62.0	62.3
.6	59.7	60.0	60.2	60.5	60.8	61.0	61.3	61.6	61.8	62.1
.7	59.5	59.8	60.1	60.3	60.6	60.9	61.1	61.4	61.7	61.9
.8	59.3	59.6	59.9	60.1	60.4	60.7	60.9	61.2	61.5	61.7
.9	59.2	59.4	59.7	60.0	60.2	60.5	60.8	61.0	61.3	61.6
27.0	59.0	59.2	59.5	59.8	60.1	60.3	60.6	60.9	61.1	61.4
.1	58.8	59.1	59.3	59.6	59.9	60.1	60.4	60.7	60.9	61.2
.2	58.6	58.9	59.2	59.4	59.7	60.0	60.2	60.5	60.8	61.0
.3	58.4	58.7	59.0	59.2	59.5	59.8	60.1	60.3	60.6	60.9
.4	58.2	58.5	58.8	59.1	59.3	59.6	59.9	60.1	60.4	60.7
.5	58.0	58.3	58.6	58.9	59.1	59.4	59.7	60.0	60.2	60.5
.6	57.9	58.1	58.4	58.7	59.0	59.2	59.5	59.8	60.0	60.3
.7	57.7	57.9	58.2	58.5	58.8	59.0	59.3	59.6	59.9	60.1
.8	57.5	57.7	58.0	58.3	58.6	58.9	59.1	59.4	59.7	59.9
.9	57.3	57.6	57.8	58.1	58.4	58.7	58.9	59.2	59.5	59.8
28.0	57.1	57.4	57.6	57.9	58.2	58.5	58.8	59.0	59.3	59.6
.1	56.9	57.2	57.4	57.7	58.0	58.3	58.6	58.8	59.1	59.4
.2	56.7	57.0	57.2	57.5	57.8	58.1	58.4	58.6	58.9	59.2
.3	56.5	56.8	57.1	57.3	57.6	57.9	58.2	58.5	58.7	59.0
.4	56.3	56.6	56.9	57.1	57.4	57.7	58.0	58.3	58.5	58.8
.5	56.1	56.4	56.7	56.9	57.2	57.5	57.8	58.1	58.3	58.6
.6	55.9	56.2	56.5	56.7	57.0	57.3	57.6	57.9	58.1	58.4
.7	55.7	56.0	56.2	56.5	56.8	57.1	57.4	57.7	57.9	58.2
.8	55.5	55.8	56.0	56.3	56.6	56.9	57.2	57.5	57.7	58.0

DIAGONAL 40.0 to 40.9.

Half the sum of the bung and head di- ameters.	Inch.									
	40.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
28.9	55.3	55.5	55.8	56.1	56.4	56.7	57.0	57.3	57.5	57.8
29.0	55.0	55.3	55.6	55.9	56.2	56.5	56.8	57.1	57.3	57.6
.1	54.8	55.1	55.4	55.7	56.0	56.3	56.6	56.9	57.1	57.4
.2	54.6	54.9	55.2	55.5	55.8	56.1	56.4	56.7	56.9	57.2
.3	54.4	54.7	55.0	55.3	55.6	55.9	56.2	56.4	56.7	57.0
.4	54.2	54.5	54.8	55.1	55.4	55.7	56.0	56.2	56.5	56.8
.5	54.0	54.3	54.6	54.9	55.2	55.4	55.7	56.0	56.3	56.6
.6	53.8	54.1	54.4	54.6	54.9	55.2	55.5	55.8	56.1	56.4
.7	53.5	53.8	54.1	54.4	54.7	55.0	55.3	55.6	55.9	56.2
.8	53.3	53.6	53.9	54.2	54.5	54.8	55.1	55.4	55.7	56.0
.9	53.1	53.4	53.7	54.0	54.3	54.6	54.9	55.2	55.5	55.8
30.0	52.9	53.2	53.5	53.8	54.1	54.4	54.7	55.0	55.3	55.5
.1	52.6	52.9	53.2	53.5	53.8	54.1	54.4	54.7	55.0	55.3
.2	52.4	52.7	53.0	53.3	53.6	53.9	54.2	54.5	54.8	55.1
.3	52.2	52.5	52.8	53.1	53.4	53.7	54.0	54.3	54.6	54.9
.4	51.9	52.3	52.6	52.9	53.2	53.5	53.8	54.1	54.4	54.7
.5	51.7	52.0	52.3	52.6	52.9	53.2	53.5	53.8	54.1	54.4
.6	51.5	51.8	52.1	52.4	52.7	53.0	53.3	53.6	53.9	54.2
.7	51.2	51.5	51.9	52.2	52.5	52.8	53.1	53.4	53.7	54.0
.8	51.0	51.3	51.6	51.9	52.2	52.5	52.9	53.2	53.5	53.8
.9	50.8	51.1	51.4	51.7	52.0	52.3	52.6	52.9	53.2	53.5
31.0	50.5	50.8	51.1	51.5	51.8	52.1	52.4	52.7	53.0	53.3
.1	50.3	50.6	50.9	51.2	51.5	51.8	52.1	52.5	52.8	53.1
.2	50.0	50.3	50.6	51.0	51.3	51.6	51.9	52.2	52.5	52.8
.3	49.8	50.1	50.4	50.7	51.0	51.4	51.7	52.0	52.3	52.6
.4	49.5	49.8	50.2	50.5	50.8	51.1	51.4	51.7	52.1	52.4
.5	49.3	49.6	49.9	50.2	50.5	50.9	51.2	51.5	51.8	52.1
.6	49.0	49.3	49.6	50.0	50.3	50.6	50.9	51.3	51.6	51.9
.7	48.7	49.1	49.4	49.7	50.0	50.4	50.7	51.0	51.3	51.6
.8	48.5	48.8	49.1	49.5	49.8	50.1	50.4	50.8	51.1	51.4
.9	48.2	48.5	48.9	49.2	49.5	49.9	50.2	50.5	50.8	51.1
32.0	48.0	48.3	48.6	48.9	49.3	49.6	49.9	50.2	50.6	50.9
.1	47.7	48.0	48.3	48.7	49.0	49.3	49.7	50.0	50.3	50.6
.2	47.4	47.7	48.1	48.4	48.7	49.1	49.4	49.7	50.1	50.4
.3	47.1	47.5	47.8	48.1	48.5	48.8	49.1	49.5	49.8	50.1
.4	46.9	47.2	47.5	47.9	48.2	48.6	48.9	49.2	49.5	49.9
.5	46.6	46.9	47.3	47.6	47.9	48.3	48.6	48.9	49.3	49.6

DIAGONAL 40.0 to 40.9.

Half the sum of the bung and head di- ameters.	Inch.									
	40.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
32.6	46.3	46.7	47.0	47.3	47.7	48.0	48.3	48.7	49.0	49.3
.7	46.0	46.4	46.7	47.1	47.4	47.7	48.1	48.4	48.7	49.1
.8	45.7	46.1	46.4	46.8	47.1	47.5	47.8	48.1	48.5	48.8
.9	45.5	45.8	46.2	46.5	46.8	47.2	47.5	47.9	48.2	48.5
33.0	45.2	45.5	45.9	46.2	46.6	46.9	47.3	47.6	47.9	48.3
.1	44.9	45.2	45.6	45.9	46.3	46.6	47.0	47.3	47.7	48.0
.2	44.6	44.9	45.3	45.6	46.0	46.3	46.7	47.0	47.4	47.7
.3	44.3	44.6	45.0	45.3	45.7	46.1	46.4	46.8	47.1	47.4
.4	44.0	44.3	44.7	45.1	45.4	45.8	46.1	46.5	46.8	47.2
.5	43.7	44.0	44.4	44.8	45.1	45.5	45.8	46.2	46.5	46.9
.6	43.4	43.7	44.1	44.5	44.8	45.2	45.5	45.9	46.2	46.6
.7	43.0	43.4	43.8	44.1	44.5	44.9	45.2	45.6	45.9	46.3
.8	42.7	43.1	43.5	43.8	44.2	44.6	44.9	45.3	45.7	46.0
.9	42.4	42.8	43.2	43.5	43.9	44.3	44.6	45.0	45.4	45.7
34.0	42.1	42.5	42.8	43.2	43.6	44.0	44.3	44.7	45.1	45.4
.1	41.8	42.1	42.5	42.9	43.3	43.7	44.0	44.4	44.8	45.1
.2	41.4	41.8	42.2	42.6	43.0	43.3	43.7	44.1	44.4	44.8
.3	41.1	41.5	41.9	42.3	42.6	43.0	43.4	43.8	44.1	44.5
.4	40.8	41.2	41.6	41.9	42.3	42.7	43.1	43.5	43.8	44.2
.5	40.4	40.8	41.2	41.6	42.0	42.4	42.8	43.1	43.5	43.9
.6	40.1	40.5	40.9	41.3	41.7	42.0	42.4	42.8	43.2	43.6
.7	39.7	40.1	40.5	40.9	41.3	41.7	42.1	42.5	42.9	43.2
.8	39.4	39.8	40.2	40.6	41.0	41.4	41.8	42.2	42.5	42.9
.9	39.0	39.4	39.9	40.3	40.7	41.0	41.4	41.8	42.2	42.6
35.0	38.7	39.1	39.5	39.9	40.3	40.7	41.1	41.5	41.9	42.3
.1	38.3	38.7	39.1	39.6	40.0	40.4	40.8	41.2	41.5	41.9
.2	37.9	38.4	38.8	39.2	39.6	40.0	40.4	40.8	41.2	41.6
.3	37.6	38.0	38.4	38.8	39.2	39.7	40.1	40.5	40.9	41.3
.4	37.2	37.6	38.0	38.5	38.9	39.3	39.7	40.1	40.5	40.9
.5	36.8	37.2	37.7	38.1	38.5	38.9	39.4	39.8	40.2	40.6
.6	36.4	36.9	37.3	37.7	38.1	38.6	39.0	39.4	39.8	40.2
.7	36.0	36.5	36.9	37.3	37.8	38.2	38.6	39.0	39.5	39.9
.8	35.6	36.1	36.5	37.0	37.4	37.8	38.2	38.7	39.1	39.5
.9	35.2	35.7	36.1	36.6	37.0	37.4	37.9	38.3	38.7	39.1
36.0	34.8	35.3	35.7	36.2	36.6	37.1	37.5	37.9	38.4	38.8
.1	34.4	34.9	35.3	35.8	36.2	36.7	37.1	37.5	38.0	38.4
.2	34.0	34.5	34.9	35.4	35.8	36.3	36.7	37.2	37.6	38.0

DIAGONAL 40.0 to 40.9.

[illegible]

DIAGONAL 41.0 to 41.9.

Half the sum of the bung and head di- ameters.	Inch. 41.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
25.7	63.8	—	—	—	—	—	—	—	—	—
.8	63.7	63.9	—	—	—	—	—	—	—	—
.9	63.5	63.8	64.0	—	—	—	—	—	—	—
26.0	63.4	63.6	63.9	64.1	64.4	—	—	—	—	—
.1	63.2	63.4	63.7	64.0	64.2	64.5	—	—	—	—
.2	63.0	63.3	63.5	63.8	64.1	64.3	64.6	—	—	—
.3	62.9	63.1	63.4	63.6	63.9	64.2	64.4	64.7	—	—
.4	62.7	63.0	63.2	63.5	63.7	64.0	64.2	64.5	64.8	65.0
.5	62.5	62.8	63.0	63.3	63.6	63.8	64.1	64.3	64.6	64.9
.6	62.4	62.6	62.9	63.1	63.4	63.7	63.9	64.2	64.4	64.7
.7	62.2	62.4	62.7	63.0	63.2	63.5	63.8	64.0	64.3	64.5
.8	62.0	62.3	62.5	62.8	63.1	63.3	63.6	63.8	64.1	64.4
.9	61.8	62.1	62.4	62.6	62.9	63.2	63.4	63.7	63.9	64.2
27.0	61.7	61.9	62.2	62.5	62.7	63.0	63.2	63.5	63.8	64.0
.1	61.5	61.7	62.0	62.3	62.5	62.8	63.1	63.3	63.6	63.9
.2	61.3	61.6	61.8	62.1	62.4	62.6	62.9	63.2	63.4	63.7
.3	61.1	61.4	61.7	61.9	62.2	62.5	62.7	63.0	63.3	63.5
.4	60.9	61.2	61.5	61.8	62.0	62.3	62.6	62.8	63.1	63.3
.5	60.8	61.0	61.3	61.6	61.8	62.1	62.4	62.6	62.9	63.2
.6	60.6	60.9	61.1	61.4	61.7	61.9	62.2	62.5	62.7	63.0
.7	60.4	60.7	60.9	61.2	61.5	61.8	62.0	62.3	62.6	62.8
.8	60.2	60.5	60.8	61.0	61.3	61.6	61.8	62.1	62.4	62.6
.9	60.0	60.3	60.6	60.9	61.1	61.4	61.7	61.9	62.2	62.5
28.0	59.8	60.1	60.4	60.7	60.9	61.2	61.5	61.8	62.0	62.3
.1	59.7	59.9	60.2	60.5	60.8	61.0	61.3	61.6	61.8	62.1
.2	59.5	59.7	60.0	60.3	60.6	60.8	61.1	61.4	61.7	61.9
.3	59.3	59.6	59.8	60.1	60.4	60.7	60.9	61.2	61.5	61.7
.4	59.1	59.4	59.6	59.9	60.2	60.5	60.7	61.0	61.3	61.6
.5	58.9	59.2	59.5	59.7	60.0	60.3	60.6	60.8	61.1	61.4
.6	58.7	59.0	59.3	59.5	59.8	60.1	60.4	60.6	60.9	61.2
.7	58.5	58.8	59.1	59.3	59.6	59.9	60.2	60.5	60.7	61.0
.8	58.3	58.6	58.9	59.2	59.4	59.7	60.0	60.3	60.5	60.8
.9	58.1	58.4	58.7	59.0	59.2	59.5	59.8	60.1	60.3	60.6
29.0	57.9	58.2	58.5	58.8	59.0	59.3	59.6	59.9	60.2	60.4
.1	57.7	58.0	58.3	58.6	58.8	59.1	59.4	59.7	60.0	60.2

DIAGONAL 41.0 TO 41.9.

Half the sum of the bung and head di- ameters.	Inch. 41.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
29.2	57.5	57.8	58.1	58.4	58.6	58.9	59.2	59.5	59.8	60.0
.3	57.3	57.6	57.9	58.2	58.4	58.7	59.0	59.3	59.6	59.9
.4	57.1	57.4	57.7	58.0	58.2	58.5	58.8	59.1	59.4	59.7
.5	56.9	57.2	57.5	57.8	58.0	58.3	58.6	58.9	59.2	59.5
.6	56.7	57.0	57.3	57.6	57.8	58.1	58.4	58.7	59.0	59.3
.7	56.5	56.8	57.1	57.3	57.6	57.9	58.2	58.5	58.8	59.1
.8	56.3	56.6	56.8	57.1	57.4	57.7	58.0	58.3	58.6	58.9
.9	56.1	56.3	56.6	56.9	57.2	57.5	57.8	58.1	58.4	58.7
30.0	55.8	56.1	56.4	56.7	57.0	57.3	57.6	57.9	58.2	58.5
.1	55.6	55.9	56.2	56.5	56.8	57.1	57.4	57.7	58.0	58.2
.2	55.4	55.7	56.0	56.3	56.6	56.9	57.2	57.5	57.7	58.0
.3	55.2	55.5	55.8	56.1	56.4	56.7	57.0	57.2	57.5	57.8
.4	55.0	55.3	55.6	55.9	56.2	56.5	56.7	57.0	57.3	57.6
.5	54.7	55.0	55.3	55.6	55.9	56.2	56.5	56.8	57.1	57.4
.6	54.5	54.8	55.1	55.4	55.7	56.0	56.3	56.6	56.9	57.2
.7	54.3	54.6	54.9	55.2	55.5	55.8	56.1	56.4	56.7	57.0
.8	54.1	54.4	54.7	55.0	55.3	55.6	55.9	56.2	56.5	56.8
.9	53.8	54.1	54.5	54.8	55.1	55.4	55.7	56.0	56.3	56.5
31.0	53.6	53.9	54.2	54.5	54.8	55.1	55.4	55.7	56.0	56.3
.1	53.4	53.7	54.0	54.3	54.6	54.9	55.2	55.5	55.8	56.1
.2	53.2	53.5	53.8	54.1	54.4	54.7	55.0	55.3	55.6	55.9
.3	52.9	53.2	53.5	53.8	54.1	54.4	54.8	55.1	55.4	55.7
.4	52.7	53.0	53.3	53.6	53.9	54.2	54.5	54.8	55.1	55.4
.5	52.4	52.8	53.1	53.4	53.7	54.0	54.3	54.6	54.9	55.2
.6	52.2	52.5	52.8	53.1	53.4	53.8	54.1	54.4	54.7	55.0
.7	52.0	52.3	52.6	52.9	53.2	53.5	53.8	54.1	54.4	54.7
.8	51.7	52.0	52.3	52.7	53.0	53.3	53.6	53.9	54.2	54.5
.9	51.5	51.8	52.1	52.4	52.7	53.0	53.4	53.7	54.0	54.3
32.0	51.2	51.5	51.9	52.2	52.5	52.8	53.1	53.4	53.7	54.0
.1	51.0	51.3	51.6	51.9	52.2	52.6	52.9	53.2	53.5	53.8
.2	50.7	51.0	51.4	51.7	52.0	52.3	52.6	52.9	53.3	53.6
.3	50.5	50.8	51.1	51.4	51.7	52.1	52.4	52.7	53.0	53.3
.4	50.2	50.5	50.8	51.2	51.5	51.8	52.1	52.5	52.8	53.1
.5	49.9	50.3	50.6	50.9	51.2	51.6	51.9	52.2	52.5	52.8
.6	49.7	50.0	50.3	50.7	51.0	51.3	51.6	52.0	52.3	52.6
.7	49.4	49.7	50.1	50.4	50.7	51.1	51.4	51.7	52.0	52.3

DIAGONAL 41.0 to 41.9.

Half the sum of the bung and head di- ameters.	Inch. 41.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
32.8	49.2	49.5	49.8	50.1	50.5	50.8	51.1	51.4	51.8	52.1
.9	48.9	49.2	49.5	49.9	50.2	50.5	50.9	51.2	51.5	51.8
33.0	48.6	48.9	49.3	49.6	49.9	50.3	50.6	50.9	51.3	51.6
.1	48.3	48.7	49.0	49.3	49.7	50.0	50.3	50.7	51.0	51.3
.2	48.1	48.4	48.7	49.1	49.4	49.8	50.1	50.4	50.7	51.1
.3	47.8	48.1	48.5	48.8	49.1	49.5	49.8	50.1	50.5	50.8
.4	47.5	47.9	48.2	48.5	48.9	49.2	49.5	49.9	50.2	50.5
.5	47.2	47.6	47.9	48.3	48.6	48.9	49.3	49.6	49.9	50.3
.6	46.9	47.3	47.6	48.0	48.3	48.7	49.0	49.3	49.7	50.0
.7	46.7	47.0	47.4	47.7	48.0	48.4	48.7	49.1	49.4	49.7
.8	46.4	46.7	47.1	47.4	47.8	48.1	48.5	48.8	49.1	49.5
.9	46.1	46.4	46.8	47.1	47.5	47.8	48.2	48.5	48.9	49.2
34.0	45.8	46.1	46.5	46.8	47.2	47.5	47.9	48.2	48.6	48.9
.1	45.5	45.8	46.2	46.5	46.9	47.3	47.6	48.0	48.3	48.6
.2	45.2	45.5	45.9	46.3	46.6	47.0	47.3	47.7	48.0	48.4
.3	44.9	45.2	45.6	46.0	46.3	46.7	47.0	47.4	47.7	48.1
.4	44.6	44.9	45.3	45.7	46.0	46.4	46.7	47.1	47.4	47.8
.5	44.3	44.6	45.0	45.4	45.7	46.1	46.4	46.8	47.2	47.5
.6	43.9	44.3	44.7	45.1	45.4	45.8	46.1	46.5	46.9	47.2
.7	43.6	44.0	44.4	44.7	45.1	45.5	45.8	46.2	46.6	46.9
.8	43.3	43.7	44.1	44.4	44.8	45.2	45.5	45.9	46.3	46.6
.9	43.0	43.4	43.7	44.1	44.5	44.9	45.2	45.6	46.0	46.3
35.0	42.7	43.0	43.4	43.8	44.2	44.5	44.9	45.3	45.7	46.0
.1	42.3	42.7	43.1	43.5	43.9	44.2	44.6	45.0	45.3	45.7
.2	42.0	42.4	42.8	43.2	43.5	43.9	44.3	44.7	45.0	45.4
.3	41.7	42.1	42.4	42.8	43.2	43.6	44.0	44.3	44.7	45.1
.4	41.3	41.7	42.1	42.5	42.9	43.3	43.6	44.0	44.4	44.8
.5	41.0	41.4	41.8	42.2	42.6	42.9	43.3	43.7	44.1	44.5
.6	40.6	41.0	41.4	41.8	42.2	42.6	43.0	43.4	43.8	44.1
.7	40.3	40.7	41.1	41.5	41.9	42.3	42.7	43.0	43.4	43.8
.8	39.9	40.3	40.7	41.1	41.5	41.9	42.3	42.7	43.1	43.5
.9	39.6	40.0	40.4	40.8	41.2	41.6	42.0	42.4	42.8	43.2
36.0	39.2	39.6	40.0	40.4	40.8	41.2	41.6	42.0	42.4	42.8
.1	38.8	39.2	39.7	40.1	40.5	40.9	41.3	41.7	42.1	42.5
.2	38.4	38.9	39.3	39.7	40.1	40.5	40.9	41.3	41.7	42.1
.3	38.1	38.5	38.9	39.3	39.8	40.2	40.6	41.0	41.4	41.8
.4	37.7	38.1	38.5	39.0	39.4	39.8	40.2	40.6	41.0	41.5

(65)

DIAGONAL 41.0 to 41.9.

Half the sum of the bung and head di- ameters.	Inch. 41.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
36.5	37.3	37.7	38.2	38.6	39.0	39.4	39.9	40.3	40.7	41.1
.6	36.9	37.3	37.8	38.2	38.6	39.1	39.5	39.9	40.3	40.7
.7	36.5	37.0	37.4	37.8	38.3	38.7	39.1	39.5	40.0	40.4
.8	36.1	36.6	37.0	37.4	37.9	38.3	38.7	39.2	39.6	40.0
.9	35.7	36.1	36.6	37.0	37.5	37.9	38.4	38.8	39.2	39.6
37.0	35.3	35.7	36.2	36.6	37.1	37.5	38.0	38.4	38.8	39.3
.1	34.9	35.3	35.8	36.2	36.7	37.1	37.6	38.0	38.5	38.9
.2	34.4	34.9	35.4	35.8	36.3	36.7	37.2	37.6	38.1	38.5
.3	34.0	34.5	34.9	35.4	35.9	36.3	36.8	37.2	37.7	38.1
.4	33.6	34.0	34.5	35.0	35.5	35.9	36.4	36.8	37.3	37.7
.5	33.1	33.6	34.1	34.6	35.0	35.5	36.0	36.4	36.9	37.3
.6	32.6	33.1	33.6	34.1	34.6	35.1	35.5	36.0	36.5	36.9
.7	32.2	32.7	33.2	33.7	34.2	34.6	35.1	35.6	36.1	36.5
.8	31.7	32.2	32.7	33.2	33.7	34.2	34.7	35.2	35.6	36.1
.9	31.2	31.7	32.3	32.8	33.3	33.8	34.3	34.7	35.2	35.7
38.0	30.7	31.3	31.8	32.3	32.8	33.3	33.8	34.3	34.8	35.3
.1	30.2	30.8	31.3	31.8	32.3	32.9	33.4	33.8	34.3	34.8
.2	29.7	30.3	30.8	31.3	31.9	32.4	32.9	33.4	33.9	34.4
.3	29.2	29.8	30.3	30.9	31.4	31.9	32.4	32.9	33.4	33.9
.4	28.7	29.3	29.8	30.4	30.9	31.4	32.0	32.5	33.0	33.5
.5	28.1	28.7	29.3	29.8	30.4	30.9	31.5	32.0	32.5	33.0
.6	27.6	28.2	28.8	29.3	29.9	30.4	31.0	31.5	32.0	32.5
.7	27.0	27.6	28.2	28.8	29.4	29.9	30.5	31.0	31.5	32.1
.8	26.4	27.1	27.7	28.3	28.8	29.4	30.0	30.5	31.0	31.6
.9	—	—	27.1	27.7	28.3	28.9	29.4	30.0	30.5	31.1
39.0	—	—	—	27.1	27.7	28.3	28.9	29.5	30.0	30.6
.1	—	—	—	—	27.2	27.8	28.4	28.9	29.5	30.1
.2	—	—	—	—	—	27.2	27.8	28.4	29.0	29.5
.3	—	—	—	—	—	—	27.2	27.8	28.4	29.0
.4	—	—	—	—	—	—	—	27.3	27.9	28.5
.5	—	—	—	—	—	—	—	—	27.3	27.9
.6	—	—	—	—	—	—	—	—	—	27.3

K

ERRATUM. Page 57, l. 14, for 37. read 37.8.

DIAGONAL 42.0 to 42.9.

Half the sum of the bung and head di- ameters.	Inch. 42.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
26.4	65.3	—	—	—	—	—	—	—	—	—
.5	65.1	65.4	—	—	—	—	—	—	—	—
.6	65.0	65.2	65.5	65.7	—	—	—	—	—	—
.7	64.8	65.1	65.3	65.6	65.8	—	—	—	—	—
.8	64.6	64.9	65.1	65.4	65.7	65.9	—	—	—	—
.9	64.5	64.7	65.0	65.2	65.5	65.8	66.0	66.3	—	—
27.0	64.3	64.6	64.8	65.1	65.3	65.6	65.9	66.1	66.4	—
.1	64.1	64.4	64.6	64.9	65.2	65.4	65.7	65.9	66.2	66.5
.2	64.0	64.2	64.5	64.7	65.0	65.3	65.5	65.8	66.0	66.3
.3	63.8	64.0	64.3	64.6	64.8	65.1	65.4	65.6	65.9	66.1
.4	63.6	63.9	64.1	64.4	64.7	64.9	65.2	65.4	65.7	66.0
.5	63.4	63.7	64.0	64.2	64.5	64.8	65.0	65.3	65.5	65.8
.6	63.3	63.5	63.8	64.1	64.3	64.6	64.8	65.1	65.4	65.6
.7	63.1	63.4	63.6	63.9	64.2	64.4	64.7	64.9	65.2	65.5
.8	62.9	63.2	63.4	63.7	64.0	64.2	64.5	64.8	65.0	65.3
.9	62.7	63.0	63.3	63.5	63.8	64.1	64.3	64.6	64.9	65.1
28.0	62.6	62.8	63.1	63.4	63.6	63.9	64.2	64.4	64.7	65.0
.1	62.4	62.6	62.9	63.2	63.5	63.7	64.0	64.3	64.5	64.8
.2	62.2	62.5	62.7	63.0	63.3	63.5	63.8	64.1	64.3	64.6
.3	62.0	62.3	62.6	62.8	63.1	63.4	63.6	63.9	64.2	64.4
.4	61.8	62.1	62.4	62.6	62.9	63.2	63.5	63.7	64.0	64.3
.5	61.7	61.9	62.2	62.5	62.7	63.0	63.3	63.5	63.8	64.1
.6	61.5	61.7	62.0	62.3	62.6	62.8	63.1	63.4	63.6	63.9
.7	61.3	61.6	61.8	62.1	62.4	62.6	62.9	63.2	63.5	63.7
.8	61.1	61.4	61.6	61.9	62.2	62.5	62.7	63.0	63.3	63.5
.9	60.9	61.2	61.5	61.7	62.0	62.3	62.5	62.8	63.1	63.4
29.0	60.7	61.0	61.3	61.5	61.8	62.1	62.4	62.6	62.9	63.2
.1	60.5	60.8	61.1	61.3	61.6	61.9	62.2	62.4	62.7	63.0
.2	60.3	60.6	60.9	61.2	61.4	61.7	62.0	62.3	62.5	62.8
.3	60.1	60.4	60.7	61.0	61.2	61.5	61.8	62.1	62.3	62.6
.4	59.9	60.2	60.5	60.8	61.1	61.3	61.6	61.9	62.2	62.4
.5	59.7	60.0	60.3	60.6	60.9	61.1	61.4	61.7	62.0	62.2
.6	59.5	59.8	60.1	60.4	60.7	60.9	61.2	61.5	61.8	62.1
.7	59.3	59.6	59.9	60.2	60.5	60.8	61.0	61.3	61.6	61.9
.8	59.1	59.4	59.7	60.0	60.3	60.6	60.8	61.1	61.4	61.7
.9	58.9	59.2	59.5	59.8	60.1	60.4	60.6	60.9	61.2	61.5

(67)

DIAGONAL 42.0 to 42.9.

Half the sum of the bung and head di- ameters.	Inch. 42.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
30.0	58.7	59.0	59.3	59.6	59.9	60.2	60.4	60.7	61.0	61.3
.1	58.5	58.8	59.1	59.4	59.7	60.0	60.2	60.5	60.8	61.1
.2	58.3	58.6	58.9	59.2	59.5	59.8	60.0	60.3	60.6	60.9
.3	58.1	58.4	58.7	59.0	59.3	59.6	59.8	60.1	60.4	60.7
.4	57.9	58.2	58.5	58.8	59.1	59.4	59.6	59.9	60.2	60.5
.5	57.7	58.0	58.3	58.6	58.9	59.1	59.4	59.7	60.0	60.3
.6	57.5	57.8	58.1	58.4	58.6	58.9	59.2	59.5	59.8	60.1
.7	57.3	57.6	57.9	58.1	58.4	58.7	59.0	59.3	59.6	59.9
.8	57.1	57.4	57.6	57.9	58.2	58.5	58.8	59.1	59.4	59.7
.9	56.8	57.1	57.4	57.7	58.0	58.3	58.6	58.9	59.2	59.5
31.0	56.6	56.9	57.2	57.5	57.8	58.1	58.4	58.7	59.0	59.3
.1	56.4	56.7	57.0	57.3	57.6	57.9	58.2	58.5	58.8	59.0
.2	56.2	56.5	56.8	57.1	57.4	57.7	58.0	58.3	58.5	58.8
.3	56.0	56.3	56.6	56.9	57.2	57.4	57.7	58.0	58.3	58.6
.4	55.7	56.0	56.3	56.6	56.9	57.2	57.5	57.8	58.1	58.4
.5	55.5	55.8	56.1	56.4	56.7	57.0	57.3	57.6	57.9	58.2
.6	55.3	55.6	55.9	56.2	56.5	56.8	57.1	57.4	57.7	58.0
.7	55.1	55.4	55.7	56.0	56.3	56.6	56.9	57.2	57.5	57.8
.8	54.8	55.1	55.4	55.7	56.0	56.3	56.6	56.9	57.2	57.5
.9	54.6	54.9	55.2	55.5	55.8	56.1	56.4	56.7	57.0	57.3
32.0	54.4	54.7	55.0	55.3	55.6	55.9	56.2	56.5	56.8	57.1
.1	54.1	54.4	54.7	55.0	55.4	55.7	56.0	56.3	56.6	56.9
.2	53.9	54.2	54.5	54.8	55.1	55.4	55.7	56.0	56.3	56.6
.3	53.6	54.0	54.3	54.6	54.9	55.2	55.5	55.8	56.1	56.4
.4	53.4	53.7	54.0	54.3	54.6	55.0	55.3	55.6	55.9	56.2
.5	53.2	53.5	53.8	54.1	54.4	54.7	55.0	55.3	55.6	56.0
.6	52.9	53.2	53.5	53.9	54.2	54.5	54.8	55.1	55.4	55.7
.7	52.7	53.0	53.3	53.6	53.9	54.2	54.6	54.9	55.2	55.5
.8	52.4	52.7	53.1	53.4	53.7	54.0	54.3	54.6	54.9	55.3
.9	52.2	52.5	52.8	53.1	53.4	53.8	54.1	54.4	54.7	55.0
33.0	51.9	52.2	52.6	52.9	53.2	53.5	53.8	54.1	54.5	54.8
.1	51.7	52.0	52.3	52.6	52.9	53.3	53.6	53.9	54.2	54.5
.2	51.4	51.7	52.0	52.4	52.7	53.0	53.3	53.7	54.0	54.3
.3	51.1	51.5	51.8	52.1	52.4	52.8	53.1	53.4	53.7	54.0
.4	50.9	51.2	51.5	51.9	52.2	52.5	52.8	53.2	53.5	53.8
.5	50.6	50.9	51.3	51.6	51.9	52.3	52.6	52.9	53.2	53.5

DIAGONAL 42.0 to 42.9.

Half the sum of the bung and head di- ameters.	Inch.									
	42.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
33.6	50.4	50.7	51.0	51.3	51.7	52.0	52.3	52.7	53.0	53.3
.7	50.1	50.4	50.7	51.1	51.4	51.7	52.1	52.4	52.7	53.0
.8	49.8	50.1	50.5	50.8	51.1	51.5	51.8	52.1	52.5	52.8
.9	49.5	49.9	50.2	50.5	50.9	51.2	51.5	51.9	42.2	52.5
34.0	49.3	49.6	49.9	50.3	50.6	51.0	51.3	51.6	51.9	52.3
.1	49.0	49.3	49.7	50.0	50.3	50.7	51.0	51.3	51.7	52.0
.2	48.7	49.1	49.4	49.7	50.1	50.4	50.7	51.1	51.4	51.7
.3	48.4	48.8	49.1	49.5	49.8	50.1	50.5	50.8	51.1	51.5
.4	48.1	48.5	48.8	49.2	49.5	49.9	50.2	50.5	50.9	51.2
.5	47.9	48.2	48.6	48.9	49.2	49.6	49.9	50.3	50.6	50.9
.6	47.6	47.9	48.3	48.6	49.0	49.3	49.7	50.0	50.3	50.7
.7	47.3	47.6	48.0	48.3	48.7	49.0	49.4	49.7	50.1	50.4
.8	47.0	47.3	47.7	48.0	48.4	48.7	49.1	49.4	49.8	50.1
.9	46.7	47.0	47.4	47.8	48.1	48.5	48.8	49.2	49.5	49.8
35.0	46.4	46.7	47.1	47.5	47.8	48.2	48.5	48.9	49.2	49.6
.1	46.1	46.4	46.8	47.2	47.5	47.9	48.2	48.6	48.9	49.3
.2	45.8	46.1	46.5	46.9	47.2	47.6	47.9	48.3	48.6	49.0
.3	45.5	45.8	46.2	46.6	46.9	47.3	47.6	48.0	48.4	48.7
.4	45.2	45.5	45.9	46.3	46.6	47.0	47.3	47.7	48.1	48.4
.5	44.8	45.2	45.6	46.0	46.3	46.7	47.0	47.4	47.8	48.1
.6	44.5	44.9	45.3	45.6	46.0	46.4	46.7	47.1	47.5	47.8
.7	44.2	44.6	45.0	45.3	45.7	46.1	46.4	46.8	47.2	47.5
.8	43.9	44.3	44.6	45.0	45.4	45.8	46.1	46.5	46.9	47.2
.9	43.5	43.9	44.3	44.7	45.1	45.4	45.8	46.2	46.6	46.9
36.0	43.2	43.6	44.0	44.4	44.8	45.1	45.5	45.9	46.2	46.6
.1	42.9	43.3	43.7	44.0	44.4	44.8	45.2	45.6	45.9	46.3
.2	42.5	42.9	43.3	43.7	44.1	44.5	44.9	45.2	45.6	46.0
.3	42.2	42.6	43.0	43.4	43.8	44.2	44.5	44.9	45.3	45.7
.4	41.9	42.3	42.7	43.0	43.4	43.8	44.2	44.6	45.0	45.4
.5	41.5	41.9	42.3	42.7	43.1	43.5	43.9	44.3	44.7	45.0
.6	41.2	41.6	42.0	42.4	42.8	43.2	43.5	43.9	44.3	44.7
.7	40.8	41.2	41.6	42.0	42.4	42.8	43.2	43.6	44.0	44.4
.8	40.4	40.8	41.3	41.7	42.1	42.5	42.9	43.3	43.7	44.0
.9	40.1	40.5	40.9	41.3	41.7	42.1	42.5	42.9	43.3	43.7
37.0	39.7	40.1	40.5	41.0	41.4	41.8	42.2	42.6	43.0	43.4
.1	39.3	39.7	40.2	40.6	41.0	41.4	41.8	42.2	42.6	43.0
.2	38.9	39.4	39.8	40.2	40.6	41.1	41.5	41.9	42.3	42.7

[illegible]

DIAGONAL 43.0 to 43.9.

Half the sum of the bung and head di- ameters.	Inch. 43.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
27.2	66.6	66.8	—	—	—	—	—	—	—	—
.3	66.4	66.7	66.9	—	—	—	—	—	—	—
.4	66.2	66.5	66.7	67.0	67.3	—	—	—	—	—
.5	66.1	66.3	66.6	66.8	67.1	67.4	—	—	—	—
.6	65.9	66.2	66.4	66.7	66.9	67.2	67.5	67.7	—	—
.7	65.7	66.0	66.3	66.5	66.8	67.0	67.3	67.5	67.8	—
.8	65.6	65.8	66.1	66.3	66.6	66.9	67.1	67.4	67.6	67.9
.9	65.4	65.7	65.9	66.2	66.4	66.7	67.0	67.2	67.5	67.7
28.0	65.2	65.5	65.7	66.0	66.3	66.5	66.8	67.1	67.3	67.6
.1	65.0	65.3	65.6	65.8	66.1	66.4	66.6	66.9	67.1	67.4
.2	64.9	65.1	65.4	65.7	65.9	66.2	66.5	66.7	67.0	67.2
.3	64.7	65.0	65.2	65.5	65.8	66.0	66.3	66.5	66.8	67.1
.4	64.5	64.8	65.1	65.3	65.6	65.8	66.1	66.4	66.6	66.9
.5	64.3	64.6	64.9	65.1	65.4	65.7	65.9	66.2	66.5	66.7
.6	64.2	64.4	64.7	65.0	65.2	65.5	65.8	66.0	66.3	66.6
.7	64.0	64.3	64.5	64.8	65.1	65.3	65.6	65.9	66.1	66.4
.8	63.8	64.1	64.3	64.6	64.9	65.2	65.4	65.7	66.0	66.2
.9	63.6	63.9	64.2	64.4	64.7	65.0	65.2	65.5	65.8	66.0
29.0	63.4	63.7	64.0	64.3	64.5	64.8	65.1	65.3	65.6	65.9
.1	63.3	63.5	63.8	64.1	64.3	64.6	64.9	65.2	65.4	65.7
.2	63.1	63.4	63.6	63.9	64.2	64.4	64.7	65.0	65.2	65.5
.3	62.9	63.2	63.4	63.7	64.0	64.3	64.5	64.8	65.1	65.3
.4	62.7	63.0	63.3	63.5	63.8	64.1	64.3	64.6	64.9	65.2
.5	62.5	62.8	63.1	63.3	63.6	63.9	64.2	64.4	64.7	65.0
.6	62.3	62.6	62.9	63.2	63.4	63.7	64.0	64.2	64.5	64.8
.7	62.1	62.4	62.7	63.0	63.2	63.5	63.8	64.1	64.3	64.6
.8	61.9	62.2	62.5	62.8	63.1	63.3	63.6	63.9	64.1	64.4
.9	61.8	62.0	62.3	62.6	62.9	63.1	63.4	63.7	64.0	64.2
30.0	61.6	61.8	62.1	62.4	62.7	63.0	63.2	63.5	63.8	64.1
.1	61.4	61.6	61.9	62.2	62.5	62.8	63.0	63.3	63.6	63.9
.2	61.2	61.5	61.7	62.0	62.3	62.6	62.8	63.1	63.4	63.7
.3	61.0	61.3	61.5	61.8	62.1	62.4	62.7	62.9	63.2	63.5
.4	60.8	61.1	61.3	61.6	61.9	62.2	62.5	62.7	63.0	63.3
.5	60.6	60.9	61.1	61.4	61.7	62.0	62.3	62.5	62.8	63.1
.6	60.4	60.7	60.9	61.2	61.5	61.8	62.1	62.3	62.6	62.9
.7	60.2	60.5	60.7	61.0	61.3	61.6	61.9	62.1	62.4	62.7
.8	60.0	60.2	60.5	60.8	61.1	61.4	61.7	62.0	62.2	62.5

(71)

DIAGONAL 43.0 to 43.9.

Half the sum of the bung and head di- ameters.	Inch.									
	43.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
30.9	59.8	60.0	60.3	60.6	60.9	61.2	61.5	61.8	62.0	62.3
31.0	59.5	59.8	60.1	60.4	60.7	61.0	61.3	61.6	61.8	62.1
.1	59.3	59.6	59.9	60.2	60.5	60.8	61.1	61.3	61.6	61.9
.2	59.1	59.4	59.7	60.0	60.3	60.6	60.9	61.1	61.4	61.7
.3	58.9	59.2	59.5	59.8	60.1	60.4	60.7	60.9	61.2	61.5
.4	58.7	59.0	59.3	59.6	59.9	60.2	60.4	60.7	61.0	61.3
.5	58.5	58.8	59.1	59.4	59.7	60.0	60.2	60.5	60.8	61.1
.6	58.3	58.6	58.9	59.2	59.4	59.7	60.0	60.3	60.6	60.9
.7	58.1	58.4	58.6	58.9	59.2	59.5	59.8	60.1	60.4	60.7
.8	57.8	58.1	58.4	58.7	59.0	59.3	59.6	59.9	60.2	60.5
.9	57.6	57.9	58.2	58.5	58.8	59.1	59.4	59.7	60.0	60.3
32.0	57.4	57.7	58.0	58.3	58.6	58.9	59.2	59.5	59.8	60.1
.1	57.2	57.5	57.8	58.1	58.4	58.7	59.0	59.3	59.5	59.8
.2	56.9	57.2	57.5	57.8	58.1	58.4	58.7	59.0	59.3	59.6
.3	56.7	57.0	57.3	57.6	57.9	58.2	58.5	58.8	59.1	59.4
.4	56.5	56.8	57.1	57.4	57.7	58.0	58.3	58.6	58.9	59.2
.5	56.3	56.6	56.9	57.2	57.5	57.8	58.1	58.4	58.7	59.0
.6	56.0	56.3	56.6	56.9	57.2	57.6	57.9	58.2	58.5	58.8
.7	55.8	56.1	56.4	56.7	57.0	57.3	57.6	57.9	58.2	58.5
.8	55.6	55.9	56.2	56.5	56.8	57.1	57.4	57.7	58.0	58.3
.9	55.3	55.6	55.9	56.3	56.6	56.9	57.2	57.5	57.8	58.1
33.0	55.1	55.4	55.7	56.0	56.3	56.6	56.9	57.2	57.6	57.9
.1	54.8	55.2	55.5	55.8	56.1	56.4	56.7	57.0	57.3	57.6
.2	54.6	54.9	55.2	55.5	55.9	56.2	56.5	56.8	57.1	57.4
.3	54.4	54.7	55.0	55.3	55.6	55.9	56.2	56.5	56.9	57.2
.4	54.1	54.4	54.7	55.1	55.4	55.7	56.0	56.3	56.6	56.9
.5	53.9	54.2	54.5	54.8	55.1	55.4	55.8	56.1	56.4	56.7
.6	53.6	53.9	54.3	54.6	54.9	55.2	55.5	55.8	56.1	56.5
.7	53.4	53.7	54.0	54.3	54.6	55.0	55.3	55.6	55.9	56.2
.8	53.1	53.4	53.8	54.1	54.4	54.7	55.0	55.3	55.7	56.0
.9	52.9	53.2	53.5	53.8	54.1	54.5	54.8	55.1	55.4	55.7
34.0	52.6	52.9	53.3	53.6	53.9	54.2	54.5	54.9	55.2	55.5
.1	52.3	52.7	53.0	53.3	53.6	54.0	54.3	54.6	54.9	55.2
.2	52.1	52.4	52.7	53.1	53.4	53.7	54.0	54.4	54.7	55.0
.3	51.8	52.1	52.5	52.8	53.1	53.5	53.8	54.1	54.4	54.7
.4	51.6	51.9	52.2	52.5	52.9	53.2	53.5	53.9	54.2	54.5
.5	51.3	51.6	51.9	52.3	52.6	52.9	53.3	53.6	53.9	54.2

DIAGONAL 43.0 to 43.9.

Half the sum of the bung and head di- ameters.	Inch.									
	43.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
34.6	51.0	51.3	51.7	52.0	52.3	52.7	53.0	53.3	53.7	54.0
.7	50.7	51.1	51.4	51.7	52.1	52.4	52.7	53.1	53.4	53.7
.8	50.5	50.8	51.1	51.5	51.8	52.2	52.5	52.8	53.1	53.5
.9	50.2	50.5	50.9	51.2	51.5	51.9	52.2	52.5	52.9	53.2
35.0	49.9	50.3	50.6	50.9	51.3	51.6	51.9	52.3	52.6	52.9
.1	49.6	50.0	50.3	50.7	51.0	51.3	51.7	52.0	52.3	52.7
.2	49.3	49.7	50.0	50.4	50.7	51.1	51.4	51.7	52.1	52.4
.3	49.1	49.4	49.8	50.1	50.4	50.8	51.1	51.5	51.8	52.1
.4	48.8	49.1	49.5	49.8	50.2	50.5	50.9	51.2	51.5	51.9
.5	48.5	48.8	49.2	49.5	49.9	50.2	50.6	50.9	51.3	51.6
.6	48.2	48.5	48.9	49.2	49.6	49.9	50.3	50.6	51.0	51.3
.7	47.9	48.2	48.6	49.0	49.3	49.7	50.0	50.4	50.7	51.0
.8	47.6	47.9	48.3	48.7	49.0	49.4	49.7	50.1	50.4	50.8
.9	47.3	47.6	48.0	48.4	48.7	49.1	49.4	49.8	50.1	50.5
36.0	47.0	47.3	47.7	48.1	48.4	48.8	49.1	49.5	49.8	50.2
.1	46.7	47.0	47.4	47.8	48.1	48.5	48.8	49.2	49.6	49.9
.2	46.4	46.7	47.1	47.5	47.8	48.2	48.6	48.9	49.3	49.6
.3	46.1	46.4	46.8	47.2	47.5	47.9	48.3	48.6	49.0	49.3
.4	45.7	46.1	46.5	46.9	47.2	47.6	48.0	48.3	48.7	49.0
.5	45.4	45.8	46.2	46.5	46.9	47.3	47.6	48.0	48.4	48.7
.6	45.1	45.5	45.8	46.2	46.6	47.0	47.3	47.7	48.1	48.4
.7	44.8	45.1	45.5	45.9	46.3	46.7	47.0	47.4	47.8	48.1
.8	44.4	44.8	45.2	45.6	46.0	46.3	46.7	47.1	47.5	47.8
.9	44.1	44.5	44.9	45.3	45.6	46.0	46.4	46.8	47.1	47.5
37.0	43.8	44.2	44.5	44.9	45.3	45.7	46.1	46.5	46.8	47.2
.1	43.4	43.8	44.2	44.6	45.0	45.4	45.8	46.1	46.5	46.9
.2	43.1	43.5	43.9	44.3	44.7	45.0	45.4	45.8	46.2	46.6
.3	42.7	43.1	43.5	43.9	44.3	44.7	45.1	45.5	45.9	46.2
.4	42.4	42.8	43.2	43.6	44.0	44.4	44.8	45.2	45.5	45.9
.5	42.0	42.4	42.8	43.2	43.6	44.0	44.4	44.8	45.2	45.6
.6	41.7	42.1	42.5	42.9	43.3	43.7	44.1	44.5	44.9	45.3
.7	41.3	41.7	42.1	42.5	43.0	43.4	43.8	44.1	44.5	44.9
.8	40.9	41.4	41.8	42.2	42.6	43.0	43.4	43.8	44.2	44.6
.9	40.6	41.0	41.4	41.8	42.2	42.7	43.1	43.5	43.9	44.3
38.0	40.2	40.6	41.0	41.5	41.9	42.3	42.7	43.1	43.5	43.9
.1	39.8	40.2	40.7	41.1	41.5	41.9	42.3	42.8	43.2	43.6

DIAGONAL 43.0 to 43.9.

Half the sum of the bung and head di- ameters.	Inch. 43.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
38.2	39.4	39.9	40.3	40.7	41.1	41.6	42.0	42.4	42.8	43.2
.3	39.0	39.5	39.9	40.3	40.8	41.2	41.6	42.0	42.4	42.9
.4	38.7	39.1	39.5	40.0	40.4	40.8	41.2	41.7	42.1	42.5
.5	38.3	38.7	39.1	39.6	40.0	40.4	40.9	41.3	41.7	42.1
.6	37.8	38.3	38.7	39.2	39.6	40.1	40.5	40.9	41.3	41.8
.7	37.4	37.9	38.3	38.8	39.2	39.7	40.1	40.5	41.0	41.4
.8	37.0	37.5	37.9	38.4	38.8	39.3	39.7	40.2	40.6	41.0
.9	36.6	37.1	37.5	38.0	38.4	38.9	39.3	39.8	40.2	40.6
39.0	36.2	36.6	37.1	37.6	38.0	38.5	38.9	39.4	39.8	40.3
.1	35.7	36.2	36.7	37.2	37.6	38.1	38.5	39.0	39.4	39.9
.2	35.3	35.8	36.3	36.7	37.2	37.7	38.1	38.6	39.0	39.5
.3	34.9	35.3	35.8	36.3	36.8	37.2	37.7	38.2	38.6	39.1
.4	34.4	34.9	35.4	35.9	36.3	36.8	37.3	37.8	38.2	38.7
.5	33.9	34.4	34.9	35.4	35.9	36.4	36.9	37.3	37.8	38.3
.6	33.5	34.0	34.5	35.0	35.5	36.0	36.4	36.9	37.4	37.8
.7	33.0	33.5	34.0	34.5	35.0	35.5	36.0	36.5	37.0	37.4
.8	32.5	33.0	33.5	34.1	34.6	35.1	35.6	36.0	36.5	37.0
.9	32.0	32.5	33.1	33.6	34.1	34.6	35.1	35.6	36.1	36.6
40.0	31.5	32.1	32.6	33.1	33.6	34.1	34.6	35.1	35.6	36.1
.1	31.0	31.5	32.1	32.6	33.1	33.7	34.2	34.7	35.2	35.7
.2	30.5	31.0	31.6	32.1	32.7	33.2	33.7	34.2	34.7	35.2
.3	29.9	30.5	31.1	31.6	32.2	32.7	33.2	33.7	34.3	34.8
.4	29.4	30.0	30.5	31.1	31.7	32.2	32.7	33.3	33.8	34.3
.5	28.8	29.4	30.0	30.6	31.1	31.7	32.2	32.8	33.3	33.8
.6	28.3	28.9	29.5	30.1	30.6	31.2	31.7	32.3	32.8	33.3
.7	—	28.3	28.9	29.5	30.1	30.7	31.2	31.8	32.3	32.9
.8	—	—	28.3	29.0	29.5	30.1	30.7	31.3	31.8	32.4
.9	—	—	—	28.4	29.0	29.6	30.2	30.7	31.3	31.8
41.0	—	—	—	—	28.4	29.0	29.6	30.2	30.8	31.3
.1	—	—	—	—	—	28.4	29.1	29.6	30.2	30.8
.2	—	—	—	—	—	—	28.5	29.1	29.7	30.3
.3	—	—	—	—	—	—	—	28.5	29.1	29.7
.4	—	—	—	—	—	—	—	—	28.5	29.2
.5	—	—	—	—	—	—	—	—	—	28.6

DIAGONAL 44.0 to 44.9.

Half the sum of the bung and head di- ameters.	Inch. 44.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
27.9	68.0	68.3	—	—	—	—	—	—	—	—
28.0	67.8	68.1	68.4	—	—	—	—	—	—	—
.1	67.7	67.9	68.2	68.4	68.7	—	—	—	—	—
.2	67.5	67.8	68.0	68.3	68.5	68.8	—	—	—	—
.3	67.3	67.6	67.9	68.1	68.4	68.6	68.9	—	—	—
.4	67.2	67.4	67.7	67.9	68.2	68.5	68.7	69.0	—	—
.5	67.0	67.3	67.5	67.8	68.0	68.3	68.6	68.8	69.1	—
.6	66.8	67.1	67.3	67.6	67.9	68.1	68.4	68.7	68.9	69.2
.7	66.7	66.9	67.2	67.4	67.7	68.0	68.2	68.5	68.7	69.0
.8	66.5	66.7	67.0	67.3	67.5	67.8	68.1	68.3	68.6	68.8
.9	66.3	66.6	66.8	67.1	67.4	67.6	67.9	68.2	68.4	68.7
29.0	66.1	66.4	66.7	66.9	67.2	67.5	67.7	68.0	68.2	68.5
.1	66.0	66.2	66.5	66.8	67.0	67.3	67.5	67.8	68.1	68.3
.2	65.8	66.0	66.3	66.6	66.8	67.1	67.4	67.6	67.9	68.2
.3	65.6	65.9	66.1	66.4	66.7	66.9	67.2	67.5	67.7	68.0
.4	65.4	65.7	66.0	66.2	66.5	66.8	67.0	67.3	67.6	67.8
.5	65.2	65.5	65.8	66.0	66.3	66.6	66.9	67.1	67.4	67.6
.6	65.1	65.3	65.6	65.9	66.1	66.4	66.7	66.9	67.2	67.5
.7	64.9	65.1	65.4	65.7	66.0	66.2	66.5	66.8	67.0	67.3
.8	64.7	65.0	65.2	65.5	65.8	66.0	66.3	66.6	66.9	67.1
.9	64.5	64.8	65.1	65.3	65.6	65.9	66.1	66.4	66.7	66.9
30.0	64.3	64.6	64.9	65.1	65.4	65.7	66.0	66.2	66.5	66.8
.1	64.1	64.4	64.7	65.0	65.2	65.5	65.8	66.0	66.3	66.6
.2	63.9	64.2	64.5	64.8	65.0	65.3	65.6	65.9	66.1	66.4
.3	63.8	64.0	64.3	64.6	64.9	65.1	65.4	65.7	65.9	66.2
.4	63.6	63.8	64.1	64.4	64.7	64.9	65.2	65.5	65.8	66.0
.5	63.4	63.7	63.9	64.2	64.5	64.8	65.0	65.3	65.6	65.9
.6	63.2	63.5	63.7	64.0	64.3	64.6	64.8	65.1	65.4	65.7
.7	63.0	63.3	63.5	63.8	64.1	64.4	64.7	64.9	65.2	65.5
.8	62.8	63.1	63.4	63.6	63.9	64.2	64.5	64.7	65.0	65.3
.9	62.6	62.9	63.2	63.4	63.7	64.0	64.3	64.5	64.8	65.1
31.0	62.4	62.7	63.0	63.2	63.5	63.8	64.1	64.4	64.6	64.9
.1	62.2	62.5	62.8	63.0	63.3	63.6	63.9	64.2	64.4	64.7
.2	62.0	62.3	62.6	62.8	63.1	63.4	63.7	64.0	64.2	64.5
.3	61.8	62.1	62.4	62.6	62.9	63.2	63.5	63.8	64.1	64.3
.4	61.6	61.9	62.2	62.4	62.7	63.0	63.3	63.6	63.9	64.1
.5	61.4	61.7	62.0	62.2	62.5	62.8	63.1	63.4	63.7	63.9

DIAGONAL 44.0 to 44.9.

Half the sum of the bung and head di- ameters.	Inch.									
	44.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
31.6	61.2	61.5	61.8	62.0	62.3	62.6	62.9	63.2	63.5	63.7
.7	61.0	61.3	61.6	61.8	62.1	62.4	62.7	63.0	63.3	63.5
.8	60.8	61.1	61.3	61.6	61.9	62.2	62.5	62.8	63.1	63.3
.9	60.6	60.8	61.1	61.4	61.7	62.0	62.3	62.6	62.9	63.1
32.0	60.3	60.6	60.9	61.2	61.5	61.8	62.1	62.4	62.7	62.9
.1	60.1	60.4	60.7	61.0	61.3	61.6	61.9	62.2	62.5	62.7
.2	59.9	60.2	60.5	60.8	61.1	61.4	61.7	62.0	62.2	62.5
.3	59.7	60.0	60.3	60.6	60.9	61.2	61.5	61.7	62.0	62.3
.4	59.5	59.8	60.1	60.4	60.7	61.0	61.2	61.5	61.8	62.1
.5	59.3	59.6	59.9	60.2	60.5	60.7	61.0	61.3	61.6	61.9
.6	59.1	59.3	59.6	59.9	60.2	60.5	60.8	61.1	61.4	61.7
.7	58.8	59.1	59.4	59.7	60.0	60.3	60.6	60.9	61.2	61.5
.8	58.6	58.9	59.2	59.5	59.8	60.1	60.4	60.7	61.0	61.3
.9	58.4	58.7	59.0	59.3	59.6	59.9	60.2	60.5	60.8	61.1
33.0	58.2	58.5	58.8	59.1	59.4	59.7	60.0	60.3	60.5	60.8
.1	57.9	58.2	58.5	58.8	59.1	59.4	59.7	60.0	60.3	60.6
.2	57.7	58.0	58.3	58.6	58.9	59.2	59.5	59.8	60.1	60.4
.3	57.5	57.8	58.1	58.4	58.7	59.0	59.3	59.6	59.9	60.2
.4	57.2	57.5	57.8	58.2	58.5	58.8	59.1	59.4	59.7	60.0
.5	57.0	57.3	57.6	57.9	58.2	58.5	58.8	59.1	59.4	59.7
.6	56.8	57.1	57.4	57.7	58.0	58.3	58.6	58.9	59.2	59.5
.7	56.5	56.8	57.1	57.5	57.8	58.1	58.4	58.7	59.0	59.3
.8	56.3	56.6	56.9	57.2	57.5	57.8	58.1	58.5	58.8	59.1
.9	56.0	56.4	56.7	57.0	57.3	57.6	57.9	58.2	58.5	58.8
34.0	55.8	56.1	56.4	56.7	57.1	57.4	57.7	58.0	58.3	58.6
.1	55.6	55.9	56.2	56.5	56.8	57.1	57.4	57.8	58.1	58.4
.2	55.3	55.6	56.0	56.3	56.6	56.9	57.2	57.5	57.8	58.1
.3	55.1	55.4	55.7	56.0	56.3	56.7	57.0	57.3	57.6	57.9
.4	54.8	55.1	55.5	55.8	56.1	56.4	56.7	57.0	57.3	57.7
.5	54.6	54.9	55.2	55.5	55.8	56.2	56.5	56.8	57.1	57.4
.6	54.3	54.6	55.0	55.3	55.6	55.9	56.2	56.6	56.9	57.2
.7	54.1	54.4	54.7	55.0	55.3	55.7	56.0	56.3	56.6	56.9
.8	53.8	54.1	54.5	54.8	55.1	55.4	55.7	56.1	56.4	56.7
.9	53.5	53.9	54.2	54.5	54.8	55.2	55.5	55.8	56.1	56.4
35.0	53.3	53.6	53.9	54.3	54.6	54.9	55.2	55.6	55.9	56.2
.1	53.0	53.3	53.7	54.0	54.3	54.7	55.0	55.3	55.6	56.0
.2	52.8	53.1	53.4	53.7	54.1	54.4	54.7	55.1	55.4	55.7

DIAGONAL 44.0 to 44.9.

Half the sum of the bung and head di- ameters.	Inch. 44.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.
35.3	52.5	52.8	53.1	53.5	53.8	54.1	54.5	54.8	55.1	55.4
.4	52.2	52.5	52.9	53.2	53.5	53.9	54.2	54.5	54.9	55.2
.5	51.9	52.3	52.6	52.9	53.3	53.6	53.9	54.3	54.6	54.9
.6	51.7	52.0	52.3	52.7	53.0	53.4	53.7	54.0	54.3	54.7
.7	51.4	51.7	52.1	52.4	52.7	53.1	53.4	53.7	54.1	54.4
.8	51.1	51.5	51.8	52.1	52.5	52.8	53.1	53.5	53.8	54.1
.9	50.8	51.2	51.5	51.9	52.2	52.5	52.9	53.2	53.5	53.9
36.0	50.5	50.9	51.2	51.6	51.9	52.3	52.6	52.9	53.3	53.6
.1	50.3	50.6	51.0	51.3	51.6	52.0	52.3	52.7	53.0	53.3
.2	50.0	50.3	50.7	51.0	51.4	51.7	52.1	52.4	52.7	53.1
.3	49.7	50.0	50.4	50.7	51.1	51.4	51.8	52.1	52.5	52.8
.4	49.4	49.7	50.1	50.4	50.8	51.1	51.5	51.8	52.2	52.5
.5	49.1	49.4	49.8	50.2	50.5	50.9	51.2	51.6	51.9	52.2
.6	48.8	49.2	49.5	49.9	50.2	50.6	50.9	51.3	51.6	52.0
.7	48.5	48.9	49.2	49.6	49.9	50.3	50.6	51.0	51.3	51.7
.8	48.2	48.6	48.9	49.3	49.6	50.0	50.3	50.7	51.0	51.4
.9	47.9	48.2	48.6	49.0	49.3	49.7	50.1	50.4	50.8	51.1
37.0	47.6	47.9	48.3	48.7	49.0	49.4	49.8	50.1	50.5	50.8
.1	47.3	47.6	48.0	48.4	48.7	49.1	49.5	49.8	50.2	50.5
.2	46.9	47.3	47.7	48.1	48.4	48.8	49.2	49.5	49.9	50.2
.3	46.6	47.0	47.4	47.7	48.1	48.5	48.9	49.2	49.6	49.9
.4	46.3	46.7	47.1	47.4	47.8	48.2	48.5	48.9	49.3	49.6
.5	46.0	46.4	46.7	47.1	47.5	47.9	48.2	48.6	49.0	49.3
.6	45.7	46.0	46.4	46.8	47.2	47.6	47.9	48.3	48.7	49.0
.7	45.3	45.7	46.1	46.5	46.9	47.2	47.6	48.0	48.4	48.7
.8	45.0	45.4	45.8	46.2	46.5	46.9	47.3	47.7	48.0	48.4
.9	44.7	45.0	45.4	45.8	46.2	46.6	47.0	47.3	47.7	48.1
38.0	44.3	44.7	45.1	45.5	45.9	46.3	46.6	47.0	47.4	47.8
.1	44.0	44.4	44.8	45.2	45.5	45.9	46.3	46.7	47.1	47.5
.2	43.6	44.0	44.4	44.8	45.2	45.6	46.0	46.4	46.8	47.1
.3	43.3	43.7	44.1	44.5	44.9	45.3	45.7	46.0	46.4	46.8
.4	42.9	43.3	43.7	44.1	44.5	44.9	45.3	45.7	46.1	46.5
.5	42.6	43.0	43.4	43.8	44.2	44.6	45.0	45.4	45.8	46.2
.6	42.2	42.6	43.0	43.4	43.8	44.2	44.6	45.0	45.4	45.8
.7	41.8	42.2	42.7	43.1	43.5	43.9	44.3	44.7	45.1	45.5
.8	41.4	41.9	42.3	42.7	43.1	43.5	43.9	44.3	44.7	45.1

Half the sum of the bung and head di- ameters.		Inch.									
		44.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
Inches.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.	L.
38.9	41.1	41.5	41.9	42.3	42.8	43.2	43.6	44.0	44.4	44.8	
39.0	40.7	41.1	41.6	42.0	42.4	42.8	43.2	43.6	44.0	44.4	
.1	40.3	40.7	41.2	41.6	42.0	42.4	42.9	43.3	43.7	44.1	
.2	39.9	40.4	40.8	41.2	41.6	42.1	42.5	42.9	43.3	43.7	
.3	39.5	40.0	40.4	40.8	41.3	41.7	42.1	42.5	43.0	43.4	
.4	39.1	39.6	40.0	40.5	40.9	41.3	41.7	42.2	42.6	43.0	
.5	38.7	39.2	39.6	40.1	40.5	40.9	41.4	41.8	42.2	42.6	
.6	38.3	38.8	39.2	39.7	40.1	40.6	41.0	41.4	41.8	42.3	
.7	37.9	38.4	38.8	39.3	39.7	40.2	40.6	41.0	41.5	41.9	
.8	37.5	37.9	38.4	38.9	39.3	39.8	40.2	40.6	41.1	41.5	
.9	37.0	37.5	38.0	38.4	38.9	39.4	39.8	40.3	40.7	41.1	
40.0	36.6	37.1	37.6	38.0	38.5	39.0	39.4	39.9	40.3	40.7	
.1	36.2	36.7	37.1	37.6	38.1	38.5	39.0	39.5	39.9	40.3	
.2	35.7	36.2	36.7	37.2	37.6	38.1	38.6	39.0	39.5	39.9	
.3	35.3	35.8	36.3	36.7	37.2	37.7	38.2	38.6	39.1	39.5	
.4	34.8	35.3	35.8	36.3	36.8	37.3	37.7	38.2	38.7	39.1	
.5	34.3	34.9	35.4	35.9	36.3	36.8	37.3	37.8	38.3	38.7	
.6	33.9	34.4	34.9	35.4	35.9	36.4	36.9	37.4	37.8	38.3	
.7	33.4	33.9	34.4	34.9	35.4	35.9	36.4	36.9	37.4	37.9	
.8	32.9	33.4	34.0	34.5	35.0	35.5	36.0	36.5	37.0	37.4	
.9	32.4	32.9	33.5	34.0	34.5	35.0	35.5	36.0	36.5	37.0	
41.0	31.9	32.4	33.0	33.5	34.0	34.5	35.1	35.6	36.1	36.6	
.1	31.4	31.9	32.5	33.0	33.5	34.1	34.6	35.1	35.6	36.1	
.2	30.8	31.4	32.0	32.5	33.1	33.6	34.1	34.6	35.1	35.6	
.3	30.3	30.9	31.4	32.0	32.5	33.1	33.6	34.1	34.7	35.2	
.4	29.8	30.3	30.9	31.5	32.0	32.6	33.1	33.7	34.2	34.7	
.5	29.2	29.8	30.4	30.9	31.5	32.1	32.6	33.2	33.7	34.2	
.6	28.6	29.2	29.8	30.4	31.0	31.6	32.1	32.7	33.2	33.7	
.7	—	28.6	29.3	29.9	30.4	31.0	31.6	32.1	32.7	33.2	
.8	—	—	28.7	29.3	29.9	30.5	31.1	31.6	32.2	32.7	
.9	—	—	—	28.7	29.3	29.9	30.5	31.1	31.7	32.2	
42.0	—	—	—	—	28.8	29.4	30.0	30.6	31.1	31.7	
.1	—	—	—	—	—	28.8	29.4	30.0	30.6	31.2	
.2	—	—	—	—	—	—	28.8	29.4	30.0	30.6	
.3	—	—	—	—	—	—	—	28.8	29.5	30.1	
.4	—	—	—	—	—	—	—	—	28.9	29.5	
.5	—	—	—	—	—	—	—	—	—	28.9	

DIAGONAL 45.0 to 46.0.

Half the sum, &c.	Inch. 45.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	46.0
Inc.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.	L.
28.7	69.3	—	—	—	—	—	—	—	—	—	—
.8	69.1	69.4	—	—	—	—	—	—	—	—	—
.9	68.9	69.2	69.5	—	—	—	—	—	—	—	—
29.0	68.8	69.0	69.3	69.6	69.8	—	—	—	—	—	—
.1	68.6	68.9	69.1	69.4	69.6	69.9	—	—	—	—	—
.2	68.4	68.7	69.0	69.2	69.5	69.7	70.0	—	—	—	—
.3	68.3	68.5	68.8	69.0	69.3	69.6	69.8	70.1	—	—	—
.4	68.1	68.4	68.6	68.9	69.1	69.4	69.7	69.9	70.2	—	—
.5	67.9	68.2	68.4	68.7	69.0	69.2	69.5	69.8	70.0	70.3	70.5
.6	67.7	68.0	68.3	68.5	68.8	69.1	69.3	69.6	69.8	70.1	70.4
.7	67.6	67.8	68.1	68.4	68.6	68.9	69.2	69.4	69.7	69.9	70.2
.8	67.4	67.7	67.9	68.2	68.5	68.7	69.0	69.2	69.5	69.8	70.0
.9	67.2	67.5	67.7	68.0	68.3	68.5	68.8	69.1	69.3	69.6	69.9
30.0	67.0	67.3	67.6	67.8	68.1	68.4	68.6	68.9	69.2	69.4	69.7
.1	66.9	67.1	67.4	67.7	67.9	68.2	68.5	68.7	69.0	69.3	69.5
.2	66.7	66.9	67.2	67.5	67.7	68.0	68.3	68.5	68.8	69.1	69.3
.3	66.5	66.8	67.0	67.3	67.6	67.8	68.1	68.4	68.6	68.9	69.2
.4	66.3	66.6	66.8	67.1	67.4	67.7	67.9	68.2	68.5	68.7	69.0
.5	66.1	66.4	66.7	66.9	67.2	67.5	67.7	68.0	68.3	68.6	68.8
.6	65.9	66.2	66.5	66.8	67.0	67.3	67.6	67.8	68.1	68.4	68.6
.7	65.8	66.0	66.3	66.6	66.8	67.1	67.4	67.7	67.9	68.2	68.5
.8	65.6	65.8	66.1	66.4	66.7	66.9	67.2	67.5	67.7	68.0	68.3
.9	65.4	65.7	65.9	66.2	66.5	66.7	67.0	67.3	67.6	67.8	68.1
31.0	65.2	65.5	65.7	66.0	66.3	66.6	66.8	67.1	67.4	67.6	67.9
.1	65.0	65.3	65.5	65.8	66.1	66.4	66.6	66.9	67.2	67.5	67.7
.2	64.8	65.1	65.4	65.6	65.9	66.2	66.5	66.7	67.0	67.3	67.6
.3	64.6	64.9	65.2	65.4	65.7	66.0	66.3	66.5	66.8	67.1	67.4
.4	64.4	64.7	65.0	65.3	65.5	65.8	66.1	66.4	66.6	66.9	67.2
.5	64.2	64.5	64.8	65.1	65.3	65.6	65.9	66.2	66.4	66.7	67.0
.6	64.0	64.3	64.6	64.9	65.1	65.4	65.7	66.0	66.3	66.5	66.8
.7	63.8	64.1	64.4	64.7	65.0	65.2	65.5	65.8	66.1	66.3	66.6
.8	63.6	63.9	64.2	64.5	64.8	65.0	65.3	65.6	65.9	66.1	66.4
.9	63.4	63.7	64.0	64.3	64.6	64.8	65.1	65.4	65.7	66.0	66.2
32.0	63.2	63.5	63.8	64.1	64.4	64.6	64.9	65.2	65.5	65.8	66.0
.1	63.0	63.3	63.6	63.9	64.2	64.4	64.7	65.0	65.3	65.6	65.8
.2	62.8	63.1	63.4	63.7	64.0	64.2	64.5	64.8	65.1	65.4	65.7

DIAGONAL 45.0 to 46.0.

Half the sum, &c.	Inch. 45.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	46.0
Inc.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.	L.
32.3	62.6	62.9	63.2	63.5	63.8	64.0	64.3	64.6	64.9	65.2	65.5
.4	62.4	62.7	63.0	63.3	63.6	63.8	64.1	64.4	64.7	65.0	65.3
.5	62.2	62.5	62.8	63.1	63.4	63.6	63.9	64.2	64.5	64.8	65.1
.6	62.0	62.3	62.6	62.9	63.1	63.4	63.7	64.0	64.3	64.6	64.9
.7	61.8	62.1	62.4	62.6	62.9	63.2	63.5	63.8	64.1	64.4	64.7
.8	61.6	61.9	62.1	62.4	62.7	63.0	63.3	63.6	63.9	64.2	64.5
.9	61.4	61.6	61.9	62.2	62.5	62.8	63.1	63.4	63.7	64.0	64.2
33.0	61.1	61.4	61.7	62.0	62.3	62.6	62.9	63.2	63.5	63.8	64.0
.1	60.9	61.2	61.5	61.8	62.1	62.4	62.7	63.0	63.3	63.5	63.8
.2	60.7	61.0	61.3	61.6	61.9	62.2	62.5	62.8	63.0	63.3	63.6
.3	60.5	60.8	61.1	61.4	61.7	62.0	62.3	62.5	62.8	63.1	63.4
.4	60.3	60.6	60.9	61.2	61.5	61.7	62.0	62.3	62.6	62.9	63.2
.5	60.0	60.3	60.6	60.9	61.2	61.5	61.8	62.1	62.4	62.7	63.0
.6	59.8	60.1	60.4	60.7	61.0	61.3	61.6	61.9	62.2	62.5	62.8
.7	59.6	59.9	60.2	60.5	60.8	61.1	61.4	61.7	62.0	62.3	62.6
.8	59.4	59.7	60.0	60.3	60.6	60.9	61.2	61.5	61.8	62.1	62.4
.9	59.1	59.4	59.7	60.0	60.3	60.6	60.9	61.2	61.5	61.8	62.1
34.0	58.9	59.2	59.5	59.8	60.1	60.4	60.7	61.0	61.3	61.6	61.9
.1	58.7	59.0	59.3	59.6	59.9	60.2	60.5	60.8	61.1	61.4	61.7
.2	58.4	58.8	59.1	59.4	59.7	60.0	60.3	60.6	60.9	61.2	61.5
.3	58.2	58.5	58.8	59.1	59.4	59.7	60.0	60.3	60.7	61.0	61.3
.4	58.0	58.3	58.6	58.9	59.2	59.5	59.8	60.1	60.4	60.7	61.0
.5	57.7	58.0	58.4	58.7	59.0	59.3	59.6	59.9	60.2	60.5	60.8
.6	57.5	57.8	58.1	58.4	58.7	59.0	59.4	59.7	60.0	60.3	60.6
.7	57.3	57.6	57.9	58.2	58.5	58.8	59.1	59.4	59.7	60.0	60.3
.8	57.0	57.3	57.6	58.0	58.3	58.6	58.9	59.2	59.5	59.8	60.1
.9	56.8	57.1	57.4	57.7	58.0	58.3	58.6	59.0	59.3	59.6	59.9
35.0	56.5	56.8	57.2	57.5	57.8	58.1	58.4	58.7	59.0	59.3	59.6
.1	56.3	56.6	56.9	57.2	57.5	57.9	58.2	58.5	58.8	59.1	59.4
.2	56.0	56.3	56.7	57.0	57.3	57.6	57.9	58.2	58.6	58.9	59.2
.3	55.8	56.1	56.4	56.7	57.0	57.4	57.7	58.0	58.3	58.6	58.9
.4	55.5	55.8	56.2	56.5	56.8	57.1	57.4	57.8	58.1	58.4	58.7
.5	55.3	55.6	55.9	56.2	56.6	56.9	57.2	57.5	57.8	58.1	58.5
.6	55.0	55.3	55.7	56.0	56.3	56.6	56.9	57.3	57.6	57.9	58.2
.7	54.7	55.1	55.4	55.7	56.0	56.4	56.7	57.0	57.3	57.6	58.0
.8	54.5	54.8	55.1	55.5	55.8	56.1	56.4	56.8	57.1	57.4	57.7
.9	54.2	54.5	54.9	55.2	55.5	55.9	56.2	56.5	56.8	57.2	57.5

DIAGONAL 45.0 to 46.0.

Half the sum, &c.	Inch. 45.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	46.0
Inc.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.	L.
36.0	54.0	54.3	54.6	54.9	55.3	55.6	55.9	56.3	56.6	56.9	57.2
.1	53.7	54.0	54.3	54.7	55.0	55.3	55.7	56.0	56.3	56.6	57.0
.2	53.4	53.7	54.1	54.4	54.7	55.1	55.4	55.7	56.1	56.4	56.7
.3	53.1	53.5	53.8	54.1	54.5	54.8	55.1	55.5	55.8	56.1	56.5
.4	52.9	53.2	53.5	53.9	54.2	54.6	54.9	55.2	55.5	55.9	56.2
.5	52.6	52.9	53.3	53.6	53.9	54.3	54.6	54.9	55.3	55.6	55.9
.6	52.3	52.7	53.0	53.3	53.7	54.0	54.3	54.7	55.0	55.3	55.7
.7	52.0	52.4	52.7	53.1	53.4	53.7	54.1	54.4	54.7	55.1	55.4
.8	51.7	52.1	52.4	52.8	53.1	53.5	53.8	54.1	54.5	54.8	55.2
.9	51.5	51.8	52.2	52.5	52.8	53.2	53.5	53.9	54.2	54.5	54.9
37.0	51.2	51.5	51.9	52.2	52.6	52.9	53.3	53.6	53.9	54.3	54.6
.1	50.9	51.2	51.6	51.9	52.3	52.6	53.0	53.3	53.7	54.0	54.3
.2	50.6	50.9	51.3	51.7	52.0	52.3	52.7	53.0	53.4	53.7	54.1
.3	50.3	50.7	51.0	51.4	51.7	52.1	52.4	52.8	53.1	53.4	53.8
.4	50.0	50.4	50.7	51.1	51.4	51.8	52.1	52.5	52.8	53.2	53.5
.5	49.7	50.1	50.4	50.8	51.1	51.5	51.8	52.2	52.5	52.9	53.2
.6	49.4	49.8	50.1	50.5	50.8	51.2	51.5	51.9	52.3	52.6	52.9
.7	49.1	49.5	49.8	50.2	50.5	50.9	51.3	51.6	52.0	52.3	52.7
.8	48.8	49.2	49.5	49.9	50.2	50.6	51.0	51.3	51.7	52.0	52.4
.9	48.5	48.8	49.2	49.6	49.9	50.3	50.7	51.0	51.4	51.7	52.1
38.0	48.2	48.5	48.9	49.3	49.6	50.0	50.4	50.7	51.1	51.4	51.8
.1	47.8	48.2	48.6	49.0	49.3	49.7	50.1	50.4	50.8	51.1	51.5
.2	47.5	47.9	48.3	48.6	49.0	49.4	49.8	50.1	50.5	50.8	51.2
.3	47.2	47.6	48.0	48.3	48.7	49.1	49.4	49.8	50.2	50.5	50.9
.4	46.9	47.3	47.6	48.0	48.4	48.8	49.1	49.5	49.9	50.2	50.6
.5	46.5	46.9	47.3	47.7	48.1	48.4	48.8	49.2	49.6	49.9	50.3
.6	46.2	46.6	47.0	47.4	47.7	48.1	48.5	48.9	49.3	49.6	50.0
.7	45.9	46.3	46.7	47.0	47.4	47.8	48.2	48.6	48.9	49.3	49.7
.8	45.5	45.9	46.3	46.7	47.1	47.5	47.9	48.2	48.6	49.0	49.4
.9	45.2	45.6	46.0	46.4	46.8	47.2	47.5	47.9	48.3	48.7	49.1
39.0	44.8	45.2	45.6	46.0	46.4	46.8	47.2	47.6	48.0	48.4	48.7
.1	44.5	44.9	45.3	45.7	46.1	46.5	46.9	47.3	47.7	48.0	48.4
.2	44.1	44.6	45.0	45.4	45.8	46.2	46.5	46.9	47.3	47.7	48.1
.3	43.8	44.2	44.6	45.0	45.4	45.8	46.2	46.6	47.0	47.4	47.8
.4	43.4	43.8	44.3	44.7	45.1	45.5	45.9	46.3	46.7	47.0	47.4
.5	43.1	43.5	43.9	44.3	44.7	45.1	45.5	45.9	46.3	46.7	47.1
.6	42.7	43.1	43.5	43.9	44.4	44.8	45.2	45.6	46.0	46.4	46.8

(81)

DIAGONAL 45.0 to 46.0:

Half the sum, &c.	Inch.											
	45 .0	1.	.2	.3	.4	.5	.6	.7	.8	.9	46.0	
Inc.	Len.	L.	L.	L.	L.	L.	L.	L.	L.	L.	L.	
39.7	42.3	42.7	43.2	43.6	44.0	44.4	44.8	45.2	45.6	46.0	46.4	
.8	41.9	42.4	42.8	43.2	43.6	44.1	44.5	44.9	45.3	45.7	46.1	
.9	41.6	42.0	42.4	42.8	43.3	43.7	44.1	44.5	44.9	45.3	45.7	
40.0	41.2	41.6	42.0	42.5	42.9	43.3	43.7	44.2	44.6	45.0	45.4	
.1	40.8	41.2	41.7	42.1	42.5	42.9	43.4	43.8	44.2	44.6	45.0	
.2	40.4	40.8	41.3	41.7	42.1	42.6	43.0	43.4	43.8	44.3	44.7	
.3	40.0	40.4	40.9	41.3	41.8	42.2	42.6	43.0	43.5	43.9	44.3	
.4	39.6	40.0	40.5	40.9	41.4	41.8	42.2	42.7	43.1	43.5	43.9	
.5	39.2	39.6	40.1	40.5	41.0	41.4	41.9	42.3	42.7	43.2	43.6	
.6	38.8	39.2	39.7	40.1	40.6	41.0	41.5	41.9	42.3	42.8	43.2	
.7	38.3	38.8	39.3	39.7	40.2	40.6	41.1	41.5	42.0	42.4	42.8	
.8	37.9	38.4	38.9	39.3	39.8	40.2	40.7	41.1	41.6	42.0	42.4	
.9	37.5	38.0	38.4	38.9	39.4	39.8	40.3	40.7	41.2	41.6	42.1	
41.0	37.0	37.5	38.0	38.5	38.9	39.4	39.9	40.3	40.8	41.2	41.7	
.1	36.6	37.1	37.6	38.0	38.5	39.0	39.5	39.9	40.4	40.8	41.3	
.2	36.1	36.6	37.1	37.6	38.1	38.6	39.0	39.5	40.0	40.4	40.9	
.3	35.7	36.2	36.7	37.2	37.7	38.1	38.6	39.1	39.5	40.0	40.5	
.4	35.2	35.7	36.2	36.7	37.2	37.7	38.2	38.7	39.1	39.6	40.1	
.5	34.7	35.3	35.8	36.3	36.8	37.3	37.7	38.2	38.7	39.2	39.6	
.6	34.3	34.8	35.3	35.8	36.3	36.8	37.3	37.8	38.3	38.7	39.2	
.7	33.8	34.3	34.8	35.3	35.9	36.4	36.9	37.3	37.8	38.3	38.8	
.8	33.3	33.8	34.3	34.9	35.4	35.9	36.4	36.9	37.4	37.9	38.4	
.9	32.8	33.3	33.9	34.4	34.9	35.4	35.9	36.4	36.9	37.4	37.9	
42.0	32.3	32.8	33.4	33.9	34.4	35.0	35.5	36.0	36.5	37.0	37.5	
.1	31.7	32.3	32.9	33.4	33.9	34.5	35.0	35.5	36.0	36.5	37.0	
.2	31.2	31.8	32.3	32.9	33.4	34.0	34.5	35.0	35.5	36.1	36.6	
.3	30.7	31.2	31.8	32.4	32.9	33.5	34.0	34.5	35.1	35.6	36.1	
.4	30.1	30.7	31.3	31.8	32.4	33.0	33.5	34.1	34.6	35.1	35.6	
.5	29.5	30.1	30.7	31.3	31.9	32.4	33.0	33.6	34.1	34.6	35.1	
.6	—	29.6	30.2	30.8	31.3	31.9	32.5	33.0	33.6	34.1	34.7	
.7	—	—	29.6	30.2	30.8	31.4	32.0	32.5	33.1	33.6	34.2	
.8	—	—	—	29.6	30.2	30.8	31.4	32.0	32.6	33.1	33.7	
.9	—	—	—	—	29.7	30.3	30.9	31.5	32.0	32.6	33.2	
43.0	—	—	—	—	—	29.7	30.3	30.9	31.5	32.1	32.6	
.1	—	—	—	—	—	—	29.7	30.3	30.9	31.5	32.1	
.2	—	—	—	—	—	—	—	29.8	30.4	31.0	31.6	
.3	—	—	—	—	—	—	—	—	29.8	30.4	31.0	
.4	—	—	—	—	—	—	—	—	—	29.8	30.4	
.5	—	—	—	—	—	—	—	—	—	—	29.9	

THE END.

0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9
3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9
5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9
6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9
7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9
8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9
9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9

1706163



